

TEACHER DEVELOPMENT  
AS ENHANCING DESCRIPTIVE INTELLIGIBILITY

by

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This is to certify that this thesis contains no material which has been accepted for the award of any other higher degree or graduate diploma in any tertiary institution, and that, to the best of my knowledge and belief, the thesis contains no material previously published or written by another person, except when due reference is made in the text of the thesis.

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## ABSTRACT OF THE STUDY

The purpose of this study is to develop a general approach to planning, conducting and evaluating teacher development programmes. It is based on a case study of a teacher development programme for which the central problem is describing effective teaching and learning, intelligibly. Teacher development, defined as the enhancement of this intelligibility, is essential to improving teacher effectiveness.

The problem of planning, conducting and evaluating this programme is considered in terms of the following constituent problems:

- (i) Planning and conducting the programme (P1);
- (ii) Developing the reading content for the programme (P2);
- (iii) Monitoring and assessing the changes in intelligibility of the programme participants' descriptions of effective teaching and learning (P3);
- (iv) Evaluating the effectiveness of the programme (P4);

Assuming a holistic epistemology, the implications of applying both a touchstone approach to theory development and Kelly's (1955) Personal Construct Theory to the solution of the above problems are considered. This yields two sets of implications for each of the constituent problems. By applying a touchstone approach to these sets of implications, a theoretical and procedural basis for the study of these problems, and hence for the planning, conduct and evaluation of the teacher development programme, is obtained.



This basis is used to develop the reading content for the programme, plan and conduct the programme and to evaluate the effectiveness of the programme in meeting its purposes. These evaluations are used to establish the procedures used as a general approach to teacher development programmes. In this case, teacher development means the enhancement of the intelligibility of descriptions of solutions to the problem being studied through this programme.

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## INTRODUCTION

### A. INTRODUCTION TO THE STUDY

- (i) Purpose of the study
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- (i) The educational importance of describing effective teaching and learning
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### D. EPISTEMOLOGICAL ASSUMPTIONS FOR THE STUDY

- (i) Foundationalist epistemologies and holistic
- (ii) Methodological implications

### A. INTRODUCTION TO THE STUDY

#### (i) Purpose of the Study

The purpose of this study is to develop and evaluate an approach to the planning, conduct and evaluation of teacher development programmes.

#### (ii) Form of the Study

This study is based on a case study of a teacher development programme conducted for a group of senior teachers.

The problem to be investigated through this case study is the planning, conduct and evaluation of a teacher development programme. For the purpose of this study, it will be assumed that:

(a) This problem entails the following constitutive problems:

- (i) The problem of planning and conducting the teacher development programme (P1);
  - (ii) The problem of developing a reading programme for this programme (P2);
  - (iii) The problem of monitoring and assessing the changes in the intelligibility of the descriptions of effective teaching and learning by programme participants (P3);
  - (iv) The problem of evaluating the effectiveness of the teacher development programme for the participants (P4).
- (b) The problem to be considered by the participants in this programme is that of describing effective teaching and learning.

(iii) Theses to be examined in this study

This study will examine the following theses:

#### Theses A

A1. That each of

(i) a touchstone approach to theory development  
and

(ii) Kelly's Personal Construct Theory (1955) have  
co-incident implications for the solution of  
the constituent problem P1, as stated above;

A2. That each of

(i) a touchstone approach to theory development,  
and

- (ii) Kelly's Personal Construct Theory (1955) have co-incident implications for the solution of the constituent problem P2, as stated above;

A3. That each of

- (i) a touchstone approach to theory development

and

- (ii) Kelly's Personal Construct Theory (1955) have co-incident implications for the solution of the constituent problem P3, as stated above;

A4. That each of

- (i) a touchstone approach to theory development

and

- (ii) Kelly's Personal Construct Theory (1955) have co-incident implications for the solution of the constituent problem P4, as stated above.

#### Thesis B

That the application of a touchstone approach to theory development to the two sets of implications, derived from the application of

- (i) a touchstone approach to theory development, and

- (ii) Kelly's Personal Construct Theory (1955), to constituent problems P1 to P4, yields a theoretical and procedural basis for the planning, conduct and evaluation of a teacher development programme.

#### Thesis C

- C1. That the approach taken to planning and conducting the teacher development programme is effective in meeting the individual and group purposes of the participants in the programme.

- C2. That the approach taken to planning and conducting the teacher development programme is effective in

meeting the general purposes of the programme, namely,

- (a) That changes in the intelligibility of the programme participants' descriptions of effective teaching and learning can be monitored and assessed effectively using repertory grid analyses and interpretations;
- (b) That participation in the teacher development programme will enhance the intelligibility of the participants' descriptions of effective teaching and learning.

#### Thesis D

That the procedures developed for the planning, conduct and evaluation of the teacher development programme can be used as a general approach to such programmes.

Theses A and B will be established in Section I (chapters 1 and 2), thesis C1 and C2 in Section III (Chapter 5 and 6), and thesis D in Section IV (Chapter 8) of this study.

#### (iv) Organisation of the report on this study

##### Introduction

The introduction to the study describes the purpose and form of the study, and the theses to be examined within the study. It gives a summary of each subsequent chapter and a description of the purposes of the teacher development programme. It also discusses the reasons for selecting the intelligibility of participants' descriptions of effective teaching and learning as the focus of the teacher development programme. The introduction concludes with a consideration of the epistemological assumptions

some current approaches to curriculum development used by teachers. These discussions are used to identify some of the central philosophical issues involved in each of these approaches. These readings will be studied by the teachers participating in the teacher development programme.

#### Chapter Four : Conducting the teacher development programme

The fourth chapter is a detailed account of the conduct of the teacher development programme, and of the monitoring and assessing of the changes in the intelligibility of descriptions of effective teaching and learning given by each programme participant.

### SECTION III : EVALUATION OF THE EFFECTIVENESS OF THE PROGRAMME

#### Chapter Five : Evaluation of the effectiveness of the teacher development programme in terms of individual and group purposes

This chapter is an evaluation of the effectiveness of the teacher development programme in terms of its individual and group purposes. It is based on participant responses to a series of evaluation questions.

#### Chapter Six : Evaluation of the effectiveness of the programme in terms of its general purposes

The sixth chapter is a series of three case studies, each based on the participation of a particular teacher in the programme, and the changes in the intelligibility of the descriptions of effective teaching and learning for that teacher throughout the teacher development programme. These case studies are



underlying this study, and of the reasons for the approach taken for this study.

## SECTION I : THEORETICAL AND METHODOLOGICAL BASIS FOR THE TEACHER DEVELOPMENT PROGRAMME

### Chapter One : Touchstone approach to theory development

The first chapter considers the touchstone approach to theory development, particularly as it relates to theories of effective teaching and learning. The implications of this approach for the constituent problems P1 to P4 are considered.

### Chapter Two : Theoretical basis for the teacher development programme

This chapter considers the implications of Kelly's Personal Construct Theory (1955), and its corollaries, for the constituent problems P1 to P4. It discusses the use of repertory grid analysis and interpretation for monitoring and assessing the changes in the intelligibility of the descriptions of effective teaching and learning given by participants in the programme.

The chapter concludes with the development of a theoretical and procedural basis for the planning, conduct and evaluation of the teacher development programme.

## SECTION II : CONDUCTING THE PROGRAMME

### Chapter Three : Developing the reading content of the programme

The third chapter describes and illustrates the development of the reading content used in the teacher development programme. This content is a discussion of

used to evaluate the effectiveness of the programme in terms of its general purposes.

Chapter Seven : Evaluation of the effectiveness of the planning, conduct and reading programme of the teacher development programme

This chapter uses the responses to the evaluation questions of Chapter 5 to assess the effectiveness of the planning, conduct and reading programme for the teacher development programme.

SECTION IV : GENERAL APPROACH TO TEACHER DEVELOPMENT

Chapter 8 : General approach to teacher development

This chapter uses the evaluations of Section III to develop a general approach to the planning, conduct and evaluation of teacher development programmes.

B. DESCRIBING EFFECTIVE TEACHING AND LEARNING

The problem to be investigated by the participants in this programme is describing effective teaching and learning. The purpose of the teacher development programme, being used to study this problem, is to enhance the intelligibility of the descriptions of effective teaching and learning given by programme participants.

(i) The educational importance of describing effective teaching and learning

As teachers become increasingly responsible for planning, presenting and evaluating curricula at school- system, school and classroom levels, their capacity to reflect, critically and constructively, on their own teaching, and their students' learning, becomes crucial. Their capacity to do so depends, in the first instance, on them being able to describe accurately and succinctly what they understand to be

effective teaching and learning. As such descriptions become more accurate and succinct, the teachers' capacity for critical reflection on teaching and learning will be enhanced.

The increasing participation of teachers in collegial decision-making emphasises the need for the effective communication of descriptions of effective teaching and learning, particularly as these relate to curriculum and organisational planning. For descriptions to be communicated effectively they must be intelligible to all concerned with the communications. Enhancing the intelligibility of teachers' descriptions of effective teaching and learning is essential if co-operation, based on communication between teachers, is to occur.

As schools become more open to public scrutiny, and hence publicly accountable, teachers' capacities to describe and justify matters, such as teaching strategies, curriculum content, assessment approaches and school organisation, will be challenged. In this sense, being able to describe effective teaching and learning will be important if teachers are to communicate effectively with school communities, and, through this, enhance the co-operation between the school and its community.

Being able to describe effective teaching and learning in ways which are both personally and publicly more intelligible will enhance a teacher's capacity to reflect critically on their classroom planning and teaching, their ability to communicate and work co-operatively within the school, and their skills in working co-operatively with the school's community. Hence, a teacher development programme which focuses on

the problem of describing effective teaching and learning, and aims to enhance the intelligibility of these descriptions, has purposes related to the personal work of the teacher, to the co-operative work of the teacher with fellow teachers, and to working with non-teaching groups, such as parents and community leaders associated with the teacher's school. The purposes of the teacher development programme may be categorized, therefore, as follows:

- A. Individual teacher purposes;
- B. Group purposes;
- C. General purposes;
- D. Professional purposes;
- E. Community purposes.

For this study, only purposes A, B and C will be considered.

These purposes will be stated in more detail in Section C of this Introduction.

(ii) The problem of describing effective teaching and learning

This is the central problem for the participants in the teacher development programme. It will be investigated through the conduct of a teacher development programme. The planning, conduct and reading content of this teacher development will emphasise alternative perspectives, and frames of reference, for describing effective teaching and learning. In particular, these perspectives and frames of reference will be represented by pairs of bi-polar statements. An example of such a pair of bi-polar statements is -

Learning is intrinsically motivated/Learning is extrinsically motivated.

Participants in the teacher development programme will seek to select those sets of bi-polar statements, frames of reference, which give the most intelligible description of effective teaching and learning for the focus class they have selected. (This selection is described in Appendix E).

(iii) The intelligibility of descriptions of effective teaching and learning

As the teacher development programme aims to enhance the intelligibility of the participants' descriptions of effective teaching and learning for their focus classes, changes in the intelligibility of these descriptions will need to be assessed and monitored throughout the programme. This monitoring and assessment will be based on the changes which occur in the pairs of bi-polar statements used in describing effective teaching and learning.

A discussion of the concept of intelligibility, and procedures for monitoring and assessing its changes, is given in Chapter 2, Section 2.3, of this study.

C. THE PURPOSES OF TEACHER DEVELOPMENT PROGRAMME

The aim of the teacher development programme is to enhance the participants' individual and collective capacities to describe, intelligibly, effective teaching and learning.

The importance of describing, intelligibly, effective teaching and learning has been discussed in

Section B (i) of this Introduction. From this, individual and group purposes have been developed.

(1) Individual teacher purposes

To enhance each participant's capacity to describe effective teaching and learning by developing their capacities to:

- (i) recognise and describe;
- (ii) explore;
- (iii) review;
- (iv) revise and clarify

alternative frames of reference which may be used to describe effective teaching and learning.

(ii) Group purposes

To enhance each participant's capacities to describe effective teaching and learning by developing their capacities to:

- (i) communicate;
- (ii) share;
- (iii) negotiate

these alternative frames of reference with other participants.

(iii) General Purposes

- (a) To monitor and assess changes in the intelligibility of the participants' descriptions of effective teaching and learning, throughout the teacher development programme, effectively;
- (b) To enhance the intelligibility of the participants' descriptions of effective teaching and learning through their participation in the teacher development programme.

These purposes will be the basis on which the teacher development programme is evaluated. This

evaluation is reported in Chapters 5, 6 and 7 of this study.

#### D. EPISTEMOLOGICAL ASSUMPTIONS

This study is concerned with a teacher development programme based on teachers' descriptions of effective teaching and learning. Any approach to analysing and interpreting these descriptions will involve epistemological assumptions. This section is concerned with identifying these assumptions, and establishing an epistemological basis for this study.

##### (i) Foundationalist and holistic epistemologies

The justification of decisions made by a teacher about teaching may be made, by that teacher, on the grounds of what the teacher claims to know about teaching. Thus a teacher may attempt to justify a decision to adopt a group-teaching approach on the basis of the claim to know that the students in the class learn more effectively when working co-operatively. That is, the ground for the justification of this decision is a claim to know that students learn more effectively when working co-operatively in this class. The justification of decisions about teaching is, in this case, based on this particular proposition or knowledge claim. In general, the justification of such decisions may be based on a knowledge claim, or set of knowledge claims.

For each such knowledge claim, three key questions may be asked. The first is "How did the teacher come to learn what is claimed to be known?". This is the question of learning, or discovery of knowledge, that is of epistemic discovery. The second question is "What are the grounds on which this knowledge claim is to be justified?" This is the question of

justification of knowledge, or epistemic justification. The third question is "Is this knowledge true and, if so, on what grounds is it claimed to be true?" This is the question of epistemic truth. Any complete epistemology must address all three questions. That is, it must include theories of epistemic discovery, justification and truth.

The first question concerns how we learn, or discover knowledge, whilst the second concerns justifying claims to know something.

Theories of knowledge, or epistemologies, have relevance to many issues including curriculum and pedagogy. But the major concerns for all epistemologies are two questions: 'how do we know what we know, if we know anything at all? - the question of learning or discovery; and 'when may we rightly claim to know something? - the question of justification.

(Walker and Evers, 1984:26)

It is beyond the scope of this study to discuss, extensively, the range of theories of knowledge which have been proposed, in attempts to answer these two questions, in the literature on epistemology. Broadly speaking, however, these theories can be classified into two groups, according to the answers they propose for the above questions. These groups are foundationalist and holistic, or coherentist, epistemologies.

Historically, epistemologies have been classified as either foundationalist or coherentist. Whilst foundationalism may take different forms, its central theses are, according to BonJour (1985), the two-fold theses of:



(a) That some empirical beliefs (knowledge claims) possess a measure of epistemic justification which is somehow immediate or intrinsic to them, at least in the sense of not being dependent, inferentially or otherwise, on the epistemic justification of other empirical beliefs (knowledge claims); and

(b) That it is these "basic beliefs" (knowledge claims), as they are sometimes called, which are the ultimate source of justification of all empirical knowledge.

(BonJour, 1985:17)

Foundationalist epistemologies trace the justification of all knowledge claims back to a foundation or base. This foundation, itself, needs no further justification. That is, there is an authoritative foundation against which all knowledge claims can be considered for justification. Foundationalist epistemologies will differ mainly in the nature of this authoritative foundation.

For a rationalist epistemology this foundation is pure reason. That is, all claims to knowledge are decided upon, and justified, in terms of (rational) reason. In contrast, an empiricist epistemology has as its foundation the evidence of the senses. Rationalist and empiricist epistemologies are foundationalist epistemologies.

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Note: For this study, "coherentist" and "holistic" have been used interchangeably. Strictly speaking, "holistic" refers to the units of appraisal in a theory as being wholes, whilst "coherence" is that property of these wholes, which determines their status as theories.

The main difficulty with foundationalist epistemologies lies in justifying the authoritative foundation on which they are based. If, for example, a reason is given for accepting, as in empiricist epistemologies, the evidence of our senses, then justification can be sought for that reason, and so on. If an epistemological foundation is to be found, then this infinite regress of reasons must be halted. Moreover, it must be halted without circularity, without defining knowledge in terms of further knowledge, or justifying sensory evidence by reference to other sensory evidence. Such circularity prevents the establishment of an epistemological foundation.

Thus the thrust of a foundationalist epistemology is to discover, or come to know or learn, the foundational sets of beliefs or knowledge claims, to justify all other knowledge claims inferentially from these, and to equate the pursuit of truth with the discovery and justification of these basic knowledge claims and the valid knowledge claims which can be inferred from them. For a foundationalist epistemology, the key questions to be answered with respect to a set of knowledge claims are of the form:

- (a) Which knowledge claims are inferentially dependent on which other knowledge claims, and how?
- (b) How is each claim inferentially linked to the basic (foundational) knowledge claims?

Answering these questions helps establish an inferentially-linked hierarchy of knowledge claims. Thus a theory becomes an inferentially-linked hierarchy of knowledge claims. Knowledge claims are inferentially dependent.

Alternatively, non-foundationalist epistemologies reject the notion of an authoritative foundation for all knowledge. In particular, holistic epistemologies differ from foundational epistemologies in that, rather than attempting to justify particular individual knowledge claims, by reference to some foundation, the basic units of knowledge are considered to be not individual claims, but whole sets of claims or theories. Thus knowledge claims stand or fall as a whole. From a holistic perspective knowledge claims are accepted or rejected, not by reference to some authoritative foundation, but in terms of their coherence with the rest of our current knowledge. For holistic epistemologies the key notion is that of coherence.

For holists, theories are whole sets of coherent knowledge claims. Clashes between these theories and newly derived evidence will, in the first instance, be resolved by adopting the most coherent solution. Similarly, clashes between competing theories will need to be resolved.

For foundationalists, any clash between theory and evidence is resolved by giving ultimate priority to some foundation. For holists there is no such priority. If evidence and theory clash,

- (a) the theory may be revised to give a more coherent fit with the evidence,
- (b) the evidence may be reviewed, or
- (c) the theory may be revised to discount the evidence, or
- (d) both theory and evidence may be revised.

There are no a priori reasons to favour evidence over theory, and so on. In all such cases, what is being sought is the integration of theory and evidence to produce the most coherent, new theory.

For holists, theory and evidence are interdependent. Thus what is, in the first place, admitted as evidence in support of, or against, a theory will depend upon the assumptions underlying this theory. That is, evidence will always be theory-laden.

Thus, a coherentist epistemology denies any relationship of epistemic priority or posteriority essential to the establishment of a hierarchy knowledge claims. Knowledge claims are not linked in a linear, or hierarchial, order of inference such as when knowledge claim A implies knowledge claim B, which, in turn, implies knowledge claim C. Rather, knowledge claims are inter-related within the totality of knowledge claims being considered. That is, they are dependent upon one another, but are not linked through inference. They are reciprocally dependent within the total set of knowledge claims. The property of such a set of knowledge claims, which is appealed to as the basis for justifying these claims, is its coherence. In this case, a theory is a coherent set of knowledge claims, which are reciprocally dependent on one another.

For a coherentist epistemology, the reciprocal dependence between any two knowledge claims, or between any two sets of knowledge claims or theories, can be established by contrasting them; that is, by considering the differences and similarities between them, and, in particular, between the various knowledge claims constituting the theories being considered.

Thus investigating reciprocal dependence implies seeking answers to the following questions:

- (a) "In what ways are the two knowledge claims similar?", and
- (b) "In what ways are they different?"

Answering these questions helps establish the coherent overlap between the two knowledge claims, or theories, and hence a new knowledge claim, or theory. For a coherentist epistemology, theory development proceeds by forming coherent overlaps between competing theories; that is between theories proposing alternative solutions to a particular problem.

A foundationalist epistemology involves linking competing knowledge claims and theories inferentially. A coherentist epistemology involves linking competing knowledge claims and theories reciprocally.

As the notion of teacher development adopted in this study emphasised developing teachers' capacities to compare and contrast various theories of effective teaching and learning, this study will consider reciprocal, rather than inferential, dependence. Theories of effective teaching and learning are considered as competing educational theories, that is, as theories directed towards solving the same educational problem. The thrust of this study is for teachers to develop coherent solutions, or theories, to this problem by considering in what ways the various knowledge claims, or theories, about effective teaching and learning are similar, and in what ways they are different. For these reasons, a coherentist epistemology has been adopted for this study.

As a coherentist epistemology is based on reciprocal dependence arising from the similarities and differences between competing knowledge claims and theories, a theory of learning (epistemic discovery), namely Kelly's Theory of Personal Constructs (1955) and a theory of knowledge justification (epistemic justification), namely the touchstone approach to theory development, which are both based on the same logic of similarities and differences, have been adopted as a theoretical basis for this study.

These two theories satisfy the requirement for theories of epistemic justification and discovery, respectively. In this study, no attempt is made to provide a coherency theory of truth. Whilst the potential difficulties in doing so are recognised, it is considered that such arguments are beyond the scope of this study. However, it may be noted that the notion of intelligibility, which is developed as a key notion in the study, is considered likely to be truth-conducive, and, at least, satisfy this initial requirement of a coherency theory of truth. Notwithstanding this, the emphasis of this study is epistemic discovery and justification based on the exploration of the reciprocal relationships between competing knowledge claims and theories of effective teaching and learning.

The adoption of this approach includes, therefore:

- (i) The assumption of a coherentist epistemology;
- (ii) The exploration of reciprocal relationships between competing theories of effective teaching and learning;
- (iii) The assumption of Kelly's (1955) Theory of Personal Constructs, and

(iv) The assumption of a touchstone approach to the development of theories of effective teaching and learning.

(ii) Methodological implications

The methodological implications of adopting this theoretical basis will be considered in Section I, chapters 1 and 2, of this study. In particular, the implications of applying each of these theories to the constituent problems P1 to P4 will be considered. These implications will then be used as a basis for planning, conducting and evaluating the teacher development programme.

## SECTION I

### THEORETICAL AND PROCEDURAL BASIS FOR THE PROGRAMME

#### Introduction

This study is based on a case study of a teacher development programme. For the participants, the focus of this programme is the description of effective teaching and learning. The problem of planning, conducting and evaluating the effectiveness of the teacher development programme has been described in terms of the following constituent problems:

- (i) The problem of planning and conducting the programme (P1);
- (ii) The problem of developing a reading content for the programme (P2);
- (iii) The problem of monitoring and assessing changes in the intelligibility of the participant's descriptions of effective teaching and learning (P3);
- (iv) The problem of evaluating the effectiveness of the programme in meeting its purposes for the participants (P4).

In chapter one, the theoretical and methodological implications of applying a touchstone approach to theory development to finding solutions for each of these problems is considered. In chapter two, the theoretical and methodological implications of applying the corollaries of Kelly's Personal Construct Theory (1955) to finding solutions for each of these problems is considered. A touchstone approach to theory development is then applied to each pair of sets of implications for each of these problems. This application yields a theoretical and methodological basis for the teacher development programme.



## CHAPTER ONE

### TOUCHSTONE APPROACH TO THEORY DEVELOPMENT

- 1.1 Touchstone approach to theory development.
- 1.2 Characteristics of the touchstone approach to theory development.
- 1.3 Touchstone approach and theories of effective teaching and learning.
  - (i) The touchstone approach and shared problems.
  - (ii) The touchstone approach and competing theories of teaching and learning.
  - (iii) The touchstone approach and coherent solutions to the problems of effective learning and teaching.
  - (iv) The touchstone approach and holistic epistemology.
  - (v) The touchstone approach and communication and co-operation, including consideration of the concepts of coherence, plausibility and intelligibility.
  - (vi) The touchstone approach and agreement and disagreement between teachers.
  - (vii) The touchstone approach and open-minded theory competition.
  - (viii) The touchstone approach and the integration of new evidence.
  - (ix) The touchstone approach and the development of knowledge.
  - (x) The touchstone approach and self-referential knowledge.

1.4 Identifying differences and similarities of competing theories.

1.5 Implications for the teacher development programme

- (i) Implications for the conduct of the teacher development programme (P1);
- (ii) Implications for the reading content of the programme (P1);
- (iii) Implications for monitoring and assessing the changes in the intelligibility of the participants' descriptions of effective teaching and learning (P3);
- (iv) Implications for evaluating the programme for individual participants (P4).

## CHAPTER ONE

### TOUCHSTONE APPROACH TO THEORY DEVELOPMENT

#### 1.1 TOUCHSTONE APPROACH TO THEORY DEVELOPMENT

If a holistic epistemology is adopted, the major task in developing theories, that is, whole sets of knowledge claims, is to resolve incoherence between theory and evidence and to facilitate the choice of theories. That is, what is needed is

a non-foundationalist set of coherence-producing procedures to facilitate theory-choice and deal with evidence.  
(Walker and Evers, 1984:27)

Walker and Evers (1984) suggest, as a "means of applying Quinean coherence theory", a methodology "based on the identification and development of 'touchstone theory' (borrowing the term 'touchstone' from Lakatos, 1970)".

For them,

Touchstone consists of the overlap between competing theories, such as common theoretical claims and methodologies, and findings produced through the application of such methodologies - evidence.

(Walker and Evers, 1984:27)

The first task is to find such overlaps in theory, and in evidence. Furthermore,

At a very general level, the acceptance of any theory involves accepting a certain amount of logic and mathematics, as well as semantic assumptions about terminology.

(op cit:27)

The touchstone, or overlap, can never be foundational. The touchstone between competing theories is that "shifting and changing body of claims, methods and findings shared by competing theories" (Walker and Evers, 1984:27). This overlap, or touchstone, is always relative to these theories as they stand at any particular time. Again, the touchstone, overlap, between competing theories in one context may not be the same for a different context. The touchstone for a given set of competing educational theories may, for example, be different for primary education and secondary education.

The touchstone approach to theory development focuses on the agreements and disagreements between theories, methods and findings. It assumes open competition between theories conducted in an open-minded way (Walker and Evers, 1983). Theories compete with one another when they propose alternative solutions to common problems. Touchstone theory development is directed towards the solution of shared problems.

For the touchstone approach, the search for knowledge is a problem-solving process. Knowledge grows through the solution of shared problems. But how is it known what constitutes a problem, and which problems are more important? Problems, and there relative importance to other problems, will be identified by applying our current whole

sets of knowledge claims, or theories, to the present situation. In this sense touchstone theory assumes a holistic epistemology and is self-referential.

## 1.2 CHARACTERISTICS OF A TOUCHSTONE APPROACH TO THEORY DEVELOPMENT

The touchstone approach to theory development has the following characteristics:

1. It is concerned with finding coherent solutions to shared problems.
2. Touchstone is the overlap between theories which propose alternative solutions to a shared problem i.e. the overlap between competing theories.
3. The touchstone approach can be used to develop new theories, which give more coherent solutions to problems.
4. Because such touchstone theories can be constantly revised, they can never become foundational.
5. The development of theories using the touchstone approach, allows for communication and co-operation, and hence progress, by proponents of competing theories.
6. The development of theory using the touchstone approach, gives high priority to agreement and disagreement amongst those who are working on theory development.
7. This approach to theory development requires open-minded theory competition.
8. The integration of new evidence into the general fabric of our knowledge using the touchstone approach to theory development can proceed rationally and objectively, by

seeking logical consistency for theories, or sets of knowledge claims.

9. The search for knowledge is through the process of solving problems.

10. A holistic epistemology, such as assumed by the touchstone approach, is necessarily self-referential. That is, knowledge claims must be examined in terms of the total fabric of knowledge of the individual, which includes the knowledge being examined.

As the touchstone approach to theory development assumes a coherentist epistemology, it is not possible to define it in terms of a list of separate and mutually exclusive characteristics. The touchstone approach will be defined in terms of the coherence of the reciprocal dependence, or overlap, between these characteristics. Descriptions of the implications of these characteristics will, therefore, overlap, and may appear to be repetitious. In the following section an attempt has been made to minimize this repetition without reducing the coherence of the description given.

### 1.3 THE TOUCHSTONE APPROACH AND THEORIES OF EFFECTIVE TEACHING AND LEARNING

This study is concerned with the theories of effective teaching and learning held by individual teachers participating in the teacher development programme. For each teacher, these theories will refer to a focus class previously selected by that teacher, and will be stated as descriptions of effective teaching and learning for that class.

The characteristics of the touchstone approach to theory development have been described in the previous section of this chapter. For this study, a touchstone approach to theory development will be applied. Thus the development of theories of effective teaching and learning by participating teachers will be according to this approach. The justification for, and methodological implications of, adopting this approach will now be discussed in terms of the characteristics of the touchstone approach.

(i) The touchstone approach and shared problems

Teachers working in schools share many problems. These include, for instance, problems of curriculum content and assessment procedures, and problems relating to the organisation of teaching and learning.

The touchstone approach to theory development is concerned with problem-solving. For this study, the problem to be addressed by the programme participants is that of describing effective teaching and learning. Given the interdependence of curriculum, organisational and teacher development, attempts to bring about changes in the curriculum, organisation or teaching of a school must raise questions related to effective teaching and learning. That is, the problem of describing effective teaching and learning is a problem common to all teachers in a school, and shared by them in any search for solutions to problems in teaching, curriculum and school organisation.

This characteristic implies that the teacher development programme must emphasise the sharing between the participating teachers of the problems, and their possible solutions, perceived by these teachers as associated with describing effective teaching and learning.

(ii) The touchstone approach and competing theories of effective teaching and learning

Teachers share the common problem of providing effective teaching and learning for the students they teach. The descriptions of effective teaching and learning given by teachers will vary. These varying descriptions will be taken to indicate different theories of effective teaching and learning. That is, each teacher is making a different set of knowledge claims relating to effective teaching and learning.

These different theories, or sets of knowledge claims, provide alternative solutions to the problem of describing effective teaching and learning. In providing alternative solutions to the same problem, these theories are said to be competing. The touchstone approach to theory development, when applied to the problem of describing effective teaching and learning, will be concerned with finding a coherent resolution of competing theories of effective teaching and learning. It will do so by focusing on the agreements and disagreements between such theories.

Which theories are in competition with one another is a function of both the problem being considered, and the general fabric of knowledge about effective teaching and learning held by the



teacher, or teachers, considering the problem. The extent to which this general fabric of knowledge is shared between teachers, or is idiosyncratic, will determine the degree to which various theories of effective teaching and learning will be seen to be in competition.

The emphasis in the teacher development programme will be on:

- (a) the shared problem of describing effective teaching and learning;
- (b) sharing theories which propose alternative solutions to this problem;
- (c) identifying the agreements and disagreements between these competing theories;
- (d) resolving these by finding the solution which is most coherent with the knowledge of effective teaching and learning of the participants.

These emphases imply:

- (a) an emphasis on sharing between the course participants;
- (b) additional theoretical input to the programme, and the sharing of this, and its implications for effective teaching and learning, between the participants;
- (c) negotiation between participants to identify the agreements and disagreements between their theories;
- (d) each course participant attempting to resolve these by finding the solution, which is most coherent with their current knowledge of effective teaching and learning.

(iii) The touchstone approach and coherent solutions to problems of describing effective teaching and learning

Touchstone theory development assumes a holistic epistemology. As such, the justification of a theory will depend upon the coherence of the theory and evidence with the general fabric of knowledge in relation to the particular problem for which the theory is being proposed. Clashes between theory and evidence, and between competing theories, are resolved by adopting the most coherent solution (theory). For the touchstone approach to theory development, the critical notion is that of "coherence". This notion will now be discussed in detail.

Coherence of descriptions of effective teaching and learning

Consider a set of statements made in an axiomatic system, such as Euclidean geometry. Such a set of statements may, for example, form the proof of a theorem or proposition in Euclidean geometry. In this case, this set of statements will provide an understanding of the proposition being proved. This understanding may be considered in two senses. These are, firstly, that the understanding provided by the set of statements is coherent and, secondly, that it is plausible.

The set of statements constituting a proof in Euclidian geometry is coherent in two ways. In the first place, the set of statements should be logically consistent. That is, they must be free from any contradictions. Secondly, the statements within the proof must be linked together to form an inter-related pattern. This will be the case when each statement refers to, or implies, at least one other statement so that all the

statements are linked together into one interconnected network. Thus a network of co-referencing can be established for the set of statements. This property of the set of statements will be referred to as co-referencing. For a set of statements in Euclidian geometry, or any other axiomatic system, the coherency of these statements can be considered in terms of their logical consistency and co-referencing.

Similar arguments may be applied to a set of statements describing effective teaching and learning. Whilst this set of statements does not form a logically deductive network, as is the case for the proof of a theorem in Euclidian geometry, its coherence can be considered in terms of its co-referencing and logical consistency.

In describing effective teaching and learning, intelligibly, a contributing factor to this intelligibility is the coherence of the description. Each description is composed of semantic units. In most cases these will be sentences, and, for this study, will be statements describing effective teaching and learning. A requirement for the description to be coherent is that each semantic unit refers to another semantic unit, and so on. That is, the various semantic units are linked, through co-referencing, to form a coherent description. A primary contributing factor for the coherence of descriptions is the co-referencing of the semantic units of this description.

Each sentence, or semantic unit, within a description will refer to its object, or objects.

certain properties, as well as relations with other objects. Thus, in describing effective teaching and learning, the student will be the object of many of the sentences used in this description. Moreover, these sentences will ascribe properties such as intelligence and curiosity to the student, and will indicate, for instance, a relationship between student curiosity and cognitive achievement. The coherence of such a description will be indicated, also, by the extent to which the properties and relations ascribed are consistent with one another, and, in particular, free from contradictions. Consistency of properties and relations is a contributing factor to the coherence of the description.

For this study, the evidence relating to teachers' theories of effective teaching and learning will be taken to be their description of effective teaching and learning for their respective focus classes. The coherence of such descriptions, as shown by the co-referencing and consistency of the descriptions of effective teaching and learning, will be taken to indicate the coherence of the theories of effective teaching and learning held by these teachers. Hence the teacher development programme, on which this study is based, will be directed towards improving the coherence of the descriptions of effective teaching and learning given by the participating teachers. In this way, new theories giving more coherent solutions to the problem of describing effective teacher and learning will be developed. Hence procedures will be developed for assessing both the co-referencing and consistency of descriptions of effective

teaching and learning given by the participating teachers.

(iv) The touchstone approach and holistic epistemology

As the touchstone approach to theory development assumes a holistic epistemology, the basic units of knowledge to be dealt with are not individual claims, but whole sets of claims, or theories. Hence, the theories of effective teaching and learning proposed by teachers must be dealt with as wholes. This means that the emphasis will be on teachers providing a set of statements which give a complete description of effective teaching and learning for their respective focus classes. This contrasts with a foundationalist approach which would stress the analysis of descriptions of effective teaching and learning to find the underlying concepts, laws and principles, which define effective teaching and learning.

In the same way, for a holistic approach, individual statements would not be considered in isolation from the other statements describing effective teaching and learning. The important feature of any set of such statements is their coherence in describing effective teaching and learning. As previously argued, this coherence will be considered in terms of the co-referencing and consistency of any set of statements, which purport to describe effective teaching and learning.

For a holistic theory of knowledge, the justification of knowledge claims depends upon their coherence with the general fabric of our knowledge. The justification of sets of knowledge claims, or theories, about effective teaching and

learning will depend upon the coherence of these knowledge claims about effective teaching and learning with the general background knowledge of teaching and learning of the teachers. As the emerging theories and this background knowledge constantly interact, causing theories to be revised and the background knowledge to be reviewed, touchstone derived theories are in a continual state of revision. This implies that the teacher development programme must be geared to participating teachers being able to review and revise their theories, and hence descriptions, of effective teaching and learning throughout the programme, and to do so with the aim of making them increasingly coherent with their developing fabric of knowledge of effective teaching and learning.

(v) The touchstone approach and communication and co-operation

Touchstone theory development is concerned with the coherent resolution of competing theories. Given the uniqueness of each participating teacher's experience as a teacher, it is likely that each teacher will have both different theories and background knowledge relating to effective teaching and learning. Given these differences, and if more generally acceptable theories of teaching and learning are to be developed, it will be necessary to facilitate the sharing between teachers of these theories and backgrounds of knowledge.

Such sharing, in the first instance, will require the effective communication of the various theories, held by individual teachers, to other teachers. The clear articulation of such theories

will be necessary. All theories will need to become intelligible to other teachers. Such intelligibility will be enhanced through communication between co-operating teachers. In this way, both the intelligibility of the theories held by individual teachers, and of the general background knowledge on effective teaching and learning shared by the participating teachers, will be enhanced. The touchstone approach to theory development allows for communication and co-operation between teachers, and progress towards more intelligible individual and collective theories of effective teaching and learning.

Progress for the teachers in the teacher development programme will be indicated by a growing intelligibility of the theories of effective teaching and learning they advocate and support. Teacher development is, therefore, to be indicated by the enhanced intelligibility of such theories.

#### INTELLIGIBILITY OF DESCRIPTIONS OF EFFECTIVE TEACHING AND LEARNING

Consider a set of statements which describes an episode of effective teaching and learning in a classroom. Under what conditions are these statements to be considered by a reader as intelligible?

Reimanian and Lobatchevskian geometries are alternative axiomatic systems of geometry to Euclidean geometry. They are, in part, due to the denial of Euclid's fifth axiom, or postulate, concerning the intersection, or non-intersection, of parallel lines. This denial, and the logical consequences of its

adoption, although coherent, were, at first, considered implausible. Both systems, and, in particular, their amendments of the fifth postulate seemed implausible when considered against a background of everyday experience perceived in Euclidean space. An axiomatic system, and its consequences, may be considered implausible unless it gives an appearance of reasonableness in the arguments it uses, and the interpretations it supports and approves. Such a system may only be considered to be intelligible if the arguments, or reasoning, it uses, and the interpretations it approves, are plausible.

For a set of statements, two contributing factors for intelligibility are proposed. For a set of statements to be intelligible, it must be both coherent and plausible. Coherency may be considered in terms of the consistency of the statements, and their capacity for co-referencing.

The coherence of a description may be distinguished from its plausibility. A description may be strongly co-referenced and highly consistent, but may not be plausible. Thus a description of effective teaching and learning may be coherent, firstly, in the sense that the various semantic units, or sentences, in the description refer, through their objects, to one another and are therefore strongly co-referenced, and, secondly, in that the properties and relations attributed to these objects of the various sentences are consistent with one another. Such a description may not, however, be plausible.

This distinction between coherence and plausibility is stated by Johnson-Laird (1983) as follows:



Coherence must be distinguished from plausibility, since a discourse may be perfectly coherent yet recount a bizarre sequence of events. The possibility of constructing a single mental model depends on the principal factors of co-reference and consistency. Each sentence in a discourse must refer, explicitly or implicitly, to an entity referred to (or introduced) in another sentence, since only this condition makes it possible to represent the sentences in a single integrated model. Likewise, the properties and relations ascribed to the referents must be consistent, that is, compatible with one another and free from contradiction. Plausibility depends upon the possibility of interpreting the discourse in an appropriate temporal, spatial, causal and intentional framework.

(Johnson-Laird, 1983:370-1)

Hence, teacher development will be indicated by an increasing intelligibility of the theories of effective teaching and learning proposed and supported by the particular teacher. Intelligibility requires both coherence and plausibility, whilst coherence can be considered in terms of co-reference and consistency. Indicators, and measures of these indicators, will be developed for the concepts of co-reference, consistency and plausibility and these will be used to indicate changes in intelligibility. This will be done in Chapter 2 of this study.

(vi) The touchstone approach and agreement and disagreement between teachers

As discussed above, communication and co-operation between teachers are implied by the adoption of a touchstone approach to theory development. It follows that communication and co-operation will be directed towards finding the overlap between the various competing theories of effective teaching and learning, and their implications. That is, agreement will be

sought as to what is the overlap between any two theories, and to the most intelligible description of this overlap. Similarly, disagreements about the overlap of competing theories, will need to be resolved to produce the most intelligible description, and hence the most intelligible theory of effective teaching and learning. Theory development proceeds according to agreement and disagreement amongst participating teachers.

Again, this implies that agreements and disagreements between proposed solutions to the problem of describing effective teaching and learning should be emphasised. As previously suggested, this will be done by providing the opportunity for teachers participating in the teacher development programme to share, negotiate, review and revise their descriptions relating to effective teaching and learning. Each of these activities will be incorporated into the conduct of the teacher development programme.

In this programme, teachers will be asked to indicate their theories of effective teaching and learning by describing effective teaching and learning for their respective focus classes. To do so, each teacher will be asked to develop a set of grammatically simple sentences describing this for their focus class. Such sets of sentences will be taken as an indication of the theory, or theories, of effective teaching and learning held by the teacher in relation to their focus class.

Each element in such a set is a single sentence statement. The agreements and disagreements between these statements will be the focus for developing more intelligible descriptions of effective teaching and

learning. The procedures for this development, and for assessing the intelligibility of emerging descriptions, will be based on repertory grid development and analysis. This development, and the procedures for analysis, will be described in chapter 2 of this study.

(vii) The touchstone approach and open-minded theory competition

Touchstone theory development concerns the overlap between competing theories. It concerns resolving the disagreements and integrating the agreements between competing theories. Thus -

...educationalists would give a very high priority to identifying and clearly stating their points of agreement and disagreement on matters of substance and method, and would address themselves to improving and devising techniques, based on their agreements, for frank and rigorous examination of their differences.

(Walker and Evers, 1984:28)

In this way, the development of educational theory and practice would take place through open, critical and intellectually developing discussion in which boundaries between, for example, the various disciplines, policy and practice, and research and practice, would begin to dissolve.

The teacher development programme will, therefore, stress the development of open, critical and intellectually developing discussions. This development will be embodied within the procedures for conducting the programme. This includes procedures for sharing, negotiating, reviewing and revising descriptions of effective teaching and learning using groups of course participants. The membership of such groups will be varied throughout the programme in an attempt to reduce any limitations on discussions

imposed by the professional and educational boundaries of the participants. In this way, a climate of open, frank and critical discussion will be encouraged.

(viii) The touchstone approach and the integration of new evidence

The justification of a holistic theory of knowledge depends upon its coherence with the general fabric of our knowledge. Clashes between theory and evidence are resolved, in the first instance, by adopting the most coherent solution. Thus theories may be revised to fit the evidence, or discount the evidence, or the evidence may be reviewed to fit the theory.

At a general level, the acceptance of any theory will involve the use of some logic and mathematics. It will also involve the acceptance of certain terms, and assumptions made about the meaning of these terms. In these senses, the development of theory, and the integration of new evidence, can proceed rationally on the basis of the requirement for logical consistency.

Competition between theories arises when these theories propose alternative solutions to common problems. The resolution of disputes arising from competing theories, and therefore competing solutions, and the integration of new evidence with such theories, can proceed rationally and objectively because these theories and evidence deal with shared problems. Thus the resolution of conflicting theories of effective teaching and learning, and the integration of new evidence, to form a new and more coherent solution, or theory, is a rational process based on the requirements for logical consistency, and is an objective process, because the theories being considered are all concerned with a common problem, namely describing effective

teaching and learning. Touchstone theory, being based on the overlap between theories, and hence on shared problems, can be developed objectively.

This implies that the teacher development programme must be guided by the common problems shared by the course participants. Emphasis must be given to the articulation and sharing of problems between the participating teachers in order that common problems can be identified. Once these have been established, the content and conduct of the programme should be directed towards their resolution. By continuing to focus on shared problems, the most objective solutions will be obtained. The programme must give ample opportunity for this articulating and sharing, and should remain directed towards the problems shared by the participants.

(ix) The touchstone approach and the development of knowledge

Theories are in competition when they propose alternative solutions to shared problems. Finding a new theory, which resolves the disputes and anomalies between the competing theories, involves finding a coherent solution to the shared problems. This new theory is a new set of knowledge claims, which fits within the general framework of the background knowledge held regarding these problems. Thus, new knowledge claims have been developed in the process of finding a coherent solution to the shared problems. That is, knowledge grows through the solution of problems. Knowledge of effective teaching and learning will grow as participants in the teacher development programme find coherent solutions to problems related to effective teaching and learning.

The programme will, therefore, emphasise solving shared problems as a means of acquiring and assimilating knowledge, rather than the acquisition of abstract theoretical knowledge. Whilst a set of readings has been prepared for this programme, these will not be used with the aim of the participants acquiring the content of these readings as a body of knowledge. Rather, they will be used to illustrate competing educational theories which, when considered in relation to the problem of describing effective teaching and learning, may give insights into this problem. Such competing theories may be used as ways of exploring the problem of describing effective teaching and learning, that is, as heuristics.

(x) The touchstone approach and self-referential knowledge

Touchstone theory development assumes a holistic epistemology. That is, the basic units of knowledge are not individual claims, but whole sets of claims, or theories. Whether a particular knowledge claim is accepted or rejected depends upon its coherence with the rest of our fabric of knowledge. But this particular claim also forms part of this general fabric of knowledge. In this sense, holistic epistemology must be self-referential. Hence, a knowledge claim relating to effective teaching and learning would be accepted or rejected in terms of its coherence with the general fabric of knowledge of effective teaching and learning, whilst recognising that this knowledge claim also forms part of this fabric of knowledge.

On this basis, the teacher development programme will stress the acceptance or rejection of a particular theory of effective teaching and learning on the basis of its coherence with the general fabric of knowledge of effective teaching of each participating teacher.

This will be done by referring all descriptions of effective teaching and learning by a teacher to the focus class of that teacher. Thus the teacher's knowledge of teaching and learning for the focus class will be a vital component of the fabric of knowledge against which descriptions of effective teaching and learning are assessed for intelligibility.

#### 1.4 IDENTIFYING AGREEMENTS AND DISAGREEMENTS OF COMPETING THEORIES

Suppose A, B and C are theories proposed for the solution of the same problem. That is, A, B and C are competing theories. In applying the touchstone approach to the development of a more coherent theory from these three competing theories, the agreements and disagreements between A, B and C must be identified.

This process may be begun by asked whether any two of A, B and C are clearly perceived to be similar. Suppose A and B are seen to be similar. To identify the crucial similarities and differences within this triad of theories two key questions may be asked. These are:

1. In what way(s) are A and B in agreement?
2. In what way(s) are the pair A and B in disagreement from C?

The answer to the first question will indicate the overlap between theories A and B, whilst the answer to the second question will show in what way(s) theories A and B do not overlap with theory C.

Suppose the statement of the answer to the first question is called the initial statement, and that for the second question the emergent statement. This nomenclature has been chosen to correspond with that used in eliciting repertory grids. The reason for this will become clear when the use of repertory grids, and

touchstone theory development, is discussed in chapter 2.

By applying these two questions to the triad of theories A, B and C, an initial statement and an emergent statement can be elicited. The initial statement represents the overlap between the pair of theories A and B, and the emergent statement the disjunction between the pair A and B and theory C.

Suppose  $A_1, A_2, \dots, A_n$  are a competing theories. Then the number of triads of theories that can be formed from this set of  $n$  theories is  ${}^nC_3$  ( ${}^nC_3$  combinations). For each of these triads, an initial and an emergent statement may be elicited. In this case, the set of  ${}^nC_3$  initial statements would represent the overlap between the pairs of elements from the triad, whilst the set of emergent statements represents the differences of each of the third elements of the triad from the pair of elements.

Consider competing theories A, B, C, D and E. These five theories will yield  ${}^5C_3$ , i.e. 10, triads. Each of these triads yields a pair of initial and emergent statements. Let these pairs of statements be  $C1, C2, \dots, C10$ , and their initial and emergent statements be  $C1P1, C2P1, \dots, C10P1$  and  $C1P2, C2P2, \dots, C10P2$ , respectively.

The competing theories, and the pairs of statements elicited from the triads of theories, can be represented in the following grid:



Competing Theories					
Initial Statements	A	B	C	D	E
C1P1					C1P2
C2P1					C2P2
C3P1					C3P2
C4P1					C4P2
C5P1					C5P2
C6P1					C6P2
C7P1					C7P2
C8P1					C8P2
C9P1					C9P2
C10P1					C10P2

If, for example, the pair of statements C1P1-C1P2 were derived from the triad A, B, C by comparing the pair A,B with C, then C1P1 represents the overlap between A and B, and C1P2 the difference of C from this pair. Thus, statement C1P1 would be in agreement with theories A and B, and disagreement with theory C. On the other hand, statement C1P2 would disagree with theories A and B, but agree with theory C. Such agreement, and disagreement, may be indicated by using a tick (✓) or cross (x), respectively, on the above grid.

In this case the grid may, for example, be as follows:

Initial Statement	A	B	C	D	E	Emergent Statement
C1P1	✓	✓	X	X	✓	C1P2
C2P1	✓	X	✓	✓	✓	C2P2
C3P1	✓	X	X	✓	✓	C3P2
C4P1	✓	✓	✓	X	✓	C4P2
C5P1	X	✓	✓	X	✓	C5P2
C6P1	✓	✓	✓	✓	X	C6P2
C7P1	X	✓	✓	✓	X	C7P2
C8P1	X	✓	✓	✓	X	C8P2
C9P1	✓	X	✓	X	✓	C9P2
C10P1	✓	✓	X	X	✓	C10P2

This indicates that the pairs shown in each of the possible theory triads listed below was used to generate the initial statement.

<u>Triad</u>		<u>Pairs of statements elicited</u>
A B C		C1P1 - C1P2
B C D		C2P1 - C2P2
C D E		C3P1 - C3P2
D E A		C4P1 - C4P2
E B A		C5P1 - C5P2
C A E		C6P1 - C6P2
D B A		C7P1 - C7P2
E C B		C8P1 - C8P2
A C D		C9P1 - C9P2
B E D		C10P1 - C10P2

In the above grid, for each pair of statements C1 to C10, two theories are not annotated. For example, theories D and E have not been annotated in relation to statements C1P1 - C1P2. Each of these theories is now considered separately in terms of which statement, C1P1

or C1P2, is in closest agreement with the particular theory, D or E. Agreement with C1P1 is indicated by a tick (✓) and with C1P2 by a cross (X). If, for example, D more nearly agrees with C1P2 and E with C1P1 this would be indicated as shown on the above grid. All other remaining theories would be matched to the appropriate pairs of statements. An example of such matchings is shown on the attached grid.

Hence, the touchstone approach, when applied to competing theories, using the triad method outlined above, can be used to develop a grid which indicates both the overlaps, or agreements, and disjunctions, or disagreements, between competing theories. Thus, for example, theories A, B and C overlap, and this overlap may be stated as C1P1, whilst theories C and D do not agree with C1P1 but with C1P2. Similarly, theories A and B are best interpreted as the sets of statements as listed below:

<u>Theory A</u>	<u>Theory B</u>
C1P1 *	C1P1 *
C2P1	C2P2
C3P1	C3P2
C4P1 *	C4P1 *
C5P2	C5P1
C6P1 *	C6P1 *
C7P2	C7P1
C8P2	C8P1
C9P1	C9P2
C10P1 *	C10P1 *

Hence, in terms of this grid, the set of statements C1P1, C4P1, C6P1 and C10P1 represents the overlap between theories A and B.

The above approach permits the comparison of the agreements and disagreements between competing

theories. This approach is based upon a triad method, and a logic of similarities and differences. It will be shown, in chapter 2, that the same method and logic is the basis of the triad method of repertory grid elicitation as developed from Kelly's Psychology of Personal Constructs (1955).

#### 1.5 IMPLICATIONS FOR THE TEACHER DEVELOPMENT PROGRAMME

The implications of the preceding section of this chapter for the teacher development programme may now be considered under the following headings:

- (a) Implications for conducting the teacher development (P1);
- (b) Implications for the reading content of the programme (P2);
- (c) Implications for monitoring and assessing changes in the intelligibility of the descriptions of effective teaching and learning given by participants (P3);
- (d) Implications for evaluating the programme (P4).

##### (i) Implications for the conduct of the teacher development programme

As the programme is focused on the problem of describing effective teaching and learning, it will be organised around participating teachers' descriptions of effective teaching and learning for their focus classes.

As the touchstone approach emphasises the sharing of problems and their possible solutions, the programme will be organised so that participants are able to share their descriptions of effective teaching and learning with one another at regular intervals throughout the programme.

The various descriptions of effective teaching and learning represent competing theories. The touchstone approach to theory development involves identifying agreements and disagreements between competing theories and attempting to resolve these by finding the most coherent alternative theory or resolution. The teacher development programme will provide opportunities for such agreements and disagreements to be identified, and discussed, with a view to resolving them.

These discussions, and the alternative descriptions arising from them, may be used by the participating teachers to review, and subsequently revise, their personal descriptions of effective teaching and learning for their focus class.

The additional input provided by the units of the reading content for the programme will be used, both individually and jointly by the participating teachers, to explore alternative sets of competing theories, and hence descriptions, of effective teaching and learning. This exploration may then be used as a basis for further sharing and discussion between participants, and for individual teachers to review and revise their descriptions of effective teaching and learning.

The conduct of the teacher development programme will, therefore, entail:

- (a) An emphasis on the participating teachers describing effective teaching and learning for their focus classes;
- (b) These teachers recognising the contrasting, and competing, theories of effective teaching

and learning which may be implied from these descriptions;

- (c) Exploring, using the readings for the programme, lecturer input and group and class discussions, the alternative theories and descriptions of effective teaching and learning, which may be implied from these readings;
- (d) Sharing these descriptions, and the theories they may imply, with other participants;
- (e) Reviewing these descriptions as a class, or in groups, and negotiating an agreed description for the class or group;
- (f) Individual participants reviewing and, if necessary, revising the description of effective teaching and learning for their focus class.

Thus the teacher development programme will be presented using the following learning modes for the participants:

- (a) The describing mode;
- (b) The recognizing mode;
- (c) The exploring mode;
- (d) The sharing mode;
- (e) The negotiating mode;
- (f) The reviewing and revising mode.

Whilst these modes of learning have been described as a sequence, it is not being suggested that the various modes of the sequence are mutually separable. Rather, this sequence is a way of construing the exploration and revision of the descriptions of effective teaching and learning of the participants, and, as such, can be used as a basis for planning the teacher development programme. In the conduct of the programme, these modes may be perceived by the participants to

enfold within one another. Thus, for example, the sharing and negotiating modes may not appear separately, particularly if the group of participants concerned are committed to negotiating an agreed set of descriptions.

Hence the programme will be organised in the following phases, each associated with one of the modes of learning given above:

(a) The describing phase

In this phase, the participants will be concerned with describing effective teaching and learning for their focus class.

(b) The recognising phase

This phase is concerned with the programme participants recognising the contrasting descriptions, and theories, of effective teaching and learning, which may be implied by their descriptions of effective learning and teaching.

(c) The exploring phase

Using course readings, inputs from the lecturer in charge of the programme, class and group discussions and individual reflection, alternative descriptions, and the competing theories of teaching and learning that these may imply, will be explored.

(d) The sharing phase

The descriptions of effective teaching and learning, and the competing theories of teaching and learning these imply, are shared with other participants through group or whole class discussions.

(e) The negotiating phase

During this phase an attempt will be made, either by groups of participants or with the

whole class, to negotiate an agreed description of effective teaching and learning.

(f) The reviewing and revising phase

In this phase, the agreed description of effective teaching and learning is considered by each participant in relation to the description originally given for their focus class. This comparison is used to review and, if necessary, revise this description.

(ii) Implications for the reading content of the programme

The reading content of the programme is described in chapter 3 of this study. Each reading unit focuses on an approach to curriculum development. Each such unit is written to assist with the exploration phase of the programme. It does so by emphasising the contrasting theories of teaching and learning, which may be inferred from the particular approach to curriculum development. Thus, for example, the reading dealing with the student-centred approach to curriculum development emphasises the contrast between extrinsic (or instrumental) and intrinsic theories of motivation. Such contrasting theories will be stated, usually, in terms of pairs of dichotomous or bi-polar statements.

(iii) Implications for monitoring and assessing the changes in the intelligibility of participants' descriptions of effective teaching and learning

In the preceding section of this chapter it was argued that the intelligibility of a description of effective teaching and learning entailed both the coherence and plausibility of that description. Furthermore, the coherence of such a description involved its co-referencing and



consistency. Procedures and measures for monitoring and assessing changes in the coherence, and hence co-referencing and consistency, and the plausibility of these descriptions will be described and justified in chapter 2 of this study. These procedures will involve those developed in section 1.4 for identifying the agreements and disagreements between competing theories using a triad method of bi-polar statement elicitation.

(iv) Implications for evaluating the programme effectiveness for individual participants

As the programme is directed towards enhancing the intelligibility of the descriptions individual participants give for effective teaching and learning, any evaluation of the programme should focus on the changes in intelligibility for individual participants, rather than for the programme participants as a whole. Moreover, as each participant has a unique background and experience in teaching, and has concentrated on describing effective teaching and learning for their focus class, case studies for individual participants will be used as a basis for evaluating the effectiveness of the programme in enhancing the intelligibility of the participants' theories of effective teaching and learning. These case studies will be given in chapter 6 of this study.

This evaluation must be distinguished from that of evaluating the approach taken to planning, conducting and evaluating this teacher development programme. The evaluation of the approach to teacher development will be based on the participant's responses to a series of evaluation

questions. These responses will be considered in terms of the stated purposes of the teacher development programme. This evaluation will be reported in chapter 5 of this study.

## CHAPTER TWO

### THEORETICAL AND PROCEDURAL BASIS FOR THE STUDY

#### 2.1 INTRODUCTION

#### 2.2 KELLY'S THEORY OF PERSONAL CONSTRUCTS

- (i) Repertory grids
- (ii) Corollaries
- (iii) Implications of these corollaries for the teacher development programme
- (iv) Summary of the implications of these corollaries for the teacher development programme
- (v) Summary of the implications for the teacher development programme

#### 2.3 THE DEVELOPMENT AND ANALYSIS OF REPERTORY GRIDS

- (i) Procedures for developing a repertory grid
- (ii) An example of developing a repertory grid
- (iii) Analysing the repertory grid
- (iv) Monitoring and assessing the intelligibility of descriptions of effective teaching and learning

#### 2.4 DEVELOPING A THEORETICAL AND PROCEDURAL BASIS FOR THE TEACHER DEVELOPMENT PROGRAMME

- (i) Applying a touchstone approach
- (ii) Theoretical and procedural basis of the teacher development programme

## 2.1 INTRODUCTION

In the introduction to this study, it was argued that there were two major questions to be addressed by any epistemological theory. These were the questions of learning, or discovery, and of justification of claims to knowledge.

In chapter 1 of this study, a touchstone approach to theory development has been used as a basis for justifying knowledge claims, and, in this case, descriptions of effective teaching and learning. The implications of this approach for the teacher development programme were then discussed.

In this chapter, Kelly's Theory of Personal Constructs (1955) is adopted as a learning theory, and its implications for the teacher development programme are considered. In particular, the procedures for developing repertory grids, based on this theory, and for using these grids to monitor and assess changes in the intelligibility of the participants' descriptions of effective teaching and learning, are discussed.

These discussions, and those of chapter 1, are then used, by applying a touchstone approach, to develop a theoretical and procedural basis for the teacher development programme.

Personal construct theory originates from the work of George A. Kelly as published in The Psychology of Personal Constructs, Volumes 1 and 2 (1955) New York: Norton and Co., Inc. From this time, there has been a strong development of personal construct theory, and its application to research and problem solving. The general development and application of this theory is indicated, for example, by Bannister and Moir (1968),

Maher (1969), Bannister (1970) and (1977), Bannister and Fransella (1971), (1977) and (1978), Thomas and Harri-Augstein (1977), Shaw (1980) and (1981), and Bonarius, Holland and Rosenberg (1981).

The initial application of personal construct theory, and, in particular, repertory grid techniques, was to research and problems in the general fields of psychology and psychiatry, including training and counselling. Such applications are, for instance, reported by Benjafeld and Adams-Webber (1975), (assimilative projections), Bieri (1966) (clinical and social judgment), Bonarius (1965) (Role constructs), Brook (1979) (Perceptions of vocational counselling), Cromwell and Caldwell (1962) (Ratings of personal constructs of self and others), Duck (1973) (Friendship formation), Gower (1977) (Dimensions of intra-personal space), Honey (1979) (Industrial and commercial training), Richardson and Weigel (1969) (Marriage relationships), Smith, Hartley and Stewart (1978) (Vocational guidance) and Tully (1976) (Social work training).

From about 1975, there has been an increasing application of construct theory, and repertory grid techniques, to general theories and research procedures in education. These general developments are exemplified by the work of Bannister and Salmon (1975), Howe (1977), Shaw and Thomas (1978) and Pope and Shaw (1981).

In addition, such theoretical developments and procedures have been applied to specific educational problems. The specific problems investigated include, in chronological order, the following:-

- (i) Attitudes to school subjects (Duckworth and Entwistle, 1974);
- (ii) The construing of reading by teachers and pupils (Beard, 1977);
- (iii) The appraisal of teaching (Keen, 1977);
- (iv) Monitoring and reflecting in teacher training (Pope, 1977);
- (v) Developing students' learning skills (Keen, 1978);
- (vi) Teaching styles in physics education (Keen, 1979);
- (vii) Staff-student interactions (Kevill and Shaw, 1980);
- (viii) Curriculum change (Olsen, 1980);
- (ix) Changing constructs of post-graduate students (Phillips, 1980);
- (x) Teacher influence in the classroom (Olsen, 1981);
- (xi) Course evaluation (Kevill, Shaw and Goodacre, 1982);
- (xii) Creativity (Shaw and Gaines, 1982);
- (xiii) Innovations in science teaching (Olsen and Reid, 1982);
- (xiv) Teachers' beliefs and principles (Mumby, 1983);
- (xv) Teachers' epistemology and practice (Pope and Scott, 1984);
- (xvi) Information technology and teacher routines (Olsen, 1985);
- (xvii) Teachers' thinking about problems in practice (Lampert, 1985).

A discussion of the use of personal construct theory in investigating teaching and learning is included in Clandinin and Connelly (1986) as part of a wider analysis and interpretation of "teachers' theories and beliefs", which focus on individual teacher's thoughts and actions, and which are called "studies of the personal".

Whilst personal construct theory, and repertory grid procedures, have been applied, extensively, to a variety of educational problems, they do not appear to have been used as part of the theoretical and procedural basis for teacher development as this is defined for this study. In this study, Kelly's (1955) Theory of Personal Constructs is used, in conjunction with a touchstone approach to theory development, as such a basis.

## 2.2 KELLY'S THEORY OF PERSONAL CONSTRUCTS

### (i) Repertory Grids

Repertory grids have their theoretical basis in Personal Construct Theories. Such theories have been developed from the original work of George A. Kelly. In 1955, Kelly published The Psychology of Personal Constructs, Volumes 1 and 2, giving comprehensive proposals relating to the construing of significant meaning by individuals. These proposals reflected a view of "man as a personal scientist."

Kelly (1955) argued that each person constructs his own version of reality using a hierarchical or lattice system of constructs. For Kelly, a person learns from experience when they are able to negotiate a viable position within their own version of reality, review it, sense it and refine it within their own world. The human being was a "personal scientist", classifying, categorizing and theorizing about their world, and, on these bases, anticipating, and hence acting, on this world.

Each person acts as a personal scientist using himself as participative subject matter. The results of this participation are construed and

interpreted in personally meaningful ways. To do this effectively, Kelly suggested that a conversational method must be used to bring into awareness the conceptual schemes constructed and held by the individual. The repertory grid has since been used as a method of developing such an awareness.

Kelly (1955) had the following view of a repertory grid:

By a "construction matrix" I mean a postulated grid in which events and abstractions are so inter-related that whatever appears to occur independently of one's intention is given meaning in depth by being plotted against whatever co-ordinate reference axes he has intentionally erected.

and

since we are talking about human experience, including our own particular experience as scientists, it may be more precise, instead of saying that the matrix is a schema in which events and abstractions are interlaced, to say that it is a man's observations and his constructs that are woven into the fabric of experience - the one ascribing meaning to the other and the other lending palpability to the one. And in this more phenomenological sense the grid might better be characterized as a "repertory grid", since it expresses one's own finite system of cross-references between the personal observations he has made and the personal constructs he has erected.

(Kelly, 1955: 290-291)

Personal constructs are the basic units of analysis in the theory of personality proposed by Kelly (1955). In this theory, the major emphasis is on the ways each individual perceives their



environment, the ways they interpret these perceptions in terms of existing personal constructs, and the consequent ways they behave towards the environment. Kelly proposes a view of man as being actively engaged in making sense of their world, and extending their experience of it. Within this view, personal constructs are the dimensions that the individual uses to conceptualize experience.

For each individual, personal constructs are used to forecast, and rehearse, events before their actual occurrence. For Kelly, man is a "personal scientist", seeking to predict and control the course of events in which they participate.

Furthermore, Kelly (1955) proposed that each person had access to a limited number of constructs. These are used to evaluate the phenomena entailed within the experience of the individual. These phenomena, such as people, events, objects, ideas, purposes and institutions, are, for Kelly, known as elements.

Kelly (1955) further suggested that each personal construct was bi-polar. That is, it was, for example, capable of being defined in terms of polar adjectives, such as "good-bad", or polar phrases, such as "makes me feel happy - makes me feel sad".

Thus a repertory grid is a "construction" matrix, which relates elements, representing the phenomena entailed in an individual's experience, and the bi-polar personal constructs that individual uses to conceptualize that experience.

Kelly's Theory of Personal Constructs (1955) is based on a set of eleven (11) corollaries. In the following section, these corollaries are stated, and their implications for the teacher development programme are considered. In particular, their implications for

- (a) Planning and conducting the programme (P1);
  - (b) Developing a reading content for the programme (P2);
  - (c) Monitoring and assessing the changes in the intelligibility of participants' descriptions of teaching and learning (P3) and
  - (d) Evaluating the programme (P4),
- are discussed.

#### (ii) Corollaries

Kelly's Theory of Personal Constructs (1955) is based on a set of corollaries. These are:

##### 1. The construction corollary

This proposes that a person anticipates events by construing their replication.

##### 2. The individuality corollary

Persons differ from each other in their construing of events.

##### 3. The organisation corollary

This assumes that each person characteristically evolves for their convenience in anticipating events, a construction system embracing ordinal relationships between constructs. Thus constructs are ways of ordering the world, and they are, in turn, organised into hierarchical or heterarchical frameworks, or into a lattice.

4. The dichotomy corollary  
This suggests that a person's construction system is composed of a finite number of dichotomous constructs.
5. The choice corollary  
A person chooses for themselves that alternative in a dichotomized construct through which they anticipate the greatest possibility for extension and definition of their system.
6. The range corollary  
A construct is convenient for a finite number of events only.
7. The experience corollary  
A person's construction system varies as they successfully construe the replication of events.
8. The modulation corollary  
The variation in a person's construction system is limited by the permeability of the constructs within whose range of convenience the variants lie.
9. The fragmentation corollary  
This states that a person may successfully employ a variety of construction sub-systems which are inferentially incompatible with one another.
10. The commonality corollary  
This assumes that to the extent that one person employs a construction of experience, which is similar to that employed by another, his psychological processes are similar to those of the other person.
11. The sociality corollary  
This proposes that, to the extent that one person construes the construction process of

another, he may play a role in a social process involving the other person.

(iii) Implications of these corollaries for the teacher development programme

This section is concerned with discussing the implications of each of the eleven (11) corollaries of Kelly's Theory of Personal Constructs for the conduct of the teacher development programme. The implications of each corollary will be discussed separately. These discussions will be used to draw conclusions relating to the teacher development programme, and, in particular, relating to the constituent problems P1 to P4.

The construction corollary

In proposing this corollary, Kelly assumes that a person comes to know their experience through successive interpretations of it. These interpretations include images and thoughts. Whilst the person is free to interpret their experience in alternative ways, they are also bound by these interpretations.

The construction corollary involves four key concepts. These are anticipation, construct, event and replication. The notion of anticipation gives the Theory of Personal Constructs its predictive and motivational features. Without the capacity to predict future events, it would be difficult for man to participate in an ever-changing world.

The act of construing is a process of abstracting in which one attributes properties to the on-going

stream of events which constitute experience. A person finds out about these events by attributing properties to these events.

.. a person notes features in a series of elements which characterise some of the elements, and are particularly uncharacteristic of others.

(Kelly, 1955:50)

For Kelly (1955), construed events are assumed to represent external events, and to do so through the abstraction of the perceived properties of these external events.

Replication implies that an event that happens now has happened before, and will happen again. The replication of events is the basis of prediction.

Kelly's (1955) theory is concerned with psychological processes, and with the relationship of these processes with the processes entailed within personal experience. Within this process view, experience is conceptualized in terms of events. A person finds out about these events by attributing properties to them. Again, according to Kelly (1955), a person detects replicate aspects in a stream of events by construing the beginnings and endings of events. Moreover, the person does not construe the event, but the common intersection of properties of these events. Thus Kelly's (1955) theory assumes a process view in which experience is conceptualized in terms of properties attributed to events.

The teacher development programme is concerned with the participating teachers describing effective teaching and learning for their respective focus classes. The assumption of the

construction corollary for the conduct of this programme implies that:

- (a) the programme, and its conduct, must be conceptualized in terms of the learning processes involved;
- (b) the emphasis will be on the participants describing effective teaching and learning for their focus class and on construing alternative interpretations of these descriptions;
- (c) the programme should focus on the participants' anticipated experience of effective teaching and learning with their focus class.

#### The individuality corollary

This corollary proposes that persons differ in their construal of events. That is, within a given context, the same events are likely to be interpreted differently by different persons. This corollary, supports, therefore, the notion that the individual's own standpoint is the most fertile starting point for the process of understanding their conduct.

The teacher development programme should emphasise, therefore, the participants' personal descriptions of effective teaching and learning. Thus these descriptions will be for the focus class of the participant, and teacher development during the programme will be indicated by changes in the intelligibility of these descriptions throughout the programme.

### The organisation corollary

This assumes that each person evolves, for their convenience in anticipating experience, a set of personal constructs, which are ordinarily related. According to Kelly (1955), this system of constructs is hierarchically grounded. It evolves to minimize inconsistencies and incompatibilities. The function of this system is to assist the individual in anticipating events. When events are not successfully anticipated, the system of constructs is reviewed and revised.

This corollary has the following implications for the teacher development programme:

- (a) The uniqueness of each individual's system of personal construct system (individuality corollary), particularly in terms of its ordination, implies that a student-centred approach will need to be taken for both the conduct of the programme, and the monitoring of student progress in the programme.
- (b) The adjustment of individual systems of personal constructs, and hence of the descriptions of effective teaching and learning given by each participant, proceeds through the elimination of inconsistencies and incompatibilities from this system. Hence emphasis will be given in the teaching development programme to:
  - (i) Frequently applying the system to the descriptions of effective teaching and learning for the focus class;
  - (ii) Using this to review and revise the construct system;

(iii) Basing this review and revision on the elimination of inconsistencies and incompatibilities from this system;

(iv) Using the exploration of alternative constructs and construct systems, gained through reading or discussions with other course participants, to assist with the elimination of inconsistencies and incompatibilities.

The elimination of inconsistencies and incompatibilities may be seen to be synonymous with an increase in intelligibility, and hence in coherence and plausibility, as described in chapter 1 of this study.

#### The dichotomy corollary

This states that an individual's construct system consists of a finite number of dichotomous constructs.

The dichotomy corollary implies that, for the teacher development programme, each participant will explore alternative interpretations of their description of effective teaching and learning for their focus class using dichotomous or bi-polar constructs.

For Kelly (1970) a construct is

the basic contrast between two groups. When it is imposed it serves to distinguish its elements and to group them. Thus the construct refers to the nature of the distinction one attempts to make between events, not the array in which events appear to stand when he gets through applying the



distinction between each of them and all others.

(Bannister, 1970:13)

Hence the same act of construing that establishes some perceived similarity between two or more events, also serves to distinguish them from other events. In this sense, each construct is both an integrating and differentiating process.

A construct is a process, and must be distinguished from a concept.

A construct is a way in which some things are seen as being alike yet different from others. The idea of a relevant contrast and a limited range of applicability or convenience is not involved in the notion of a concept, but is essential to the definition of a construct. Sometimes concepts are also regarded as ways in which certain things are actually alike and really different from other things. This use suggests the concept is being regarded as a feature of the nature of things/an inherent categorisation of reality. The idea of a construct does not carry with it any such assumption, but rather is seen as an interpretation imposed upon events, not carried in the events themselves. The reality of a construct is in its use by a person as a device for making sense of the world, and so anticipating it more fully. It must be stressed that all invented dichotomies, however widely agreed (large-small), specifically annotated (base-treble), or scientifically approved (acid-alkali) are constructs - useful conventions, not facts of nature.

(Bannister and Moir, 1968:25-6)

Furthermore,

...it must be understood that the personal constructs abstract similarity and difference, simultaneously. One cannot be abstracted without implying the other. For a person to treat two incidents as different is to imply that one of them appears to be like

another he knows. Conversely, for a person to treat two incidents as similar is to imply that he contrasts both of them with at least one other incident he knows. We intend this to be considered as an essential feature of the personal construct by means of which we hope to understand the psychology of human behaviour.

(Kelly, 1969: 102-3)

For a construct, both similarity and difference are essential. For Kelly this dichotomous nature of constructs is an essential feature of the way in which experience is interpreted. Each construct represents a bi-polar distinction.

For the teacher development programme these discussions imply:

- (i) The exploration of the differences and similarities within, and between, descriptions of effective teaching and learning;
- (ii) Using these explorations to elicit bi-polar constructs as devices for interpreting these descriptions;
- (iii) Basing the eliciting of these constructs on contrasting the similarities and differences of a group of at least three semantic units of descriptions of effective teaching and learning;
- (iv) Suggesting, through both reading, discussion and personal reflection, alternative bi-polar constructs, which could be used in interpreting descriptions of effective teaching and learning.

#### The choice corollary

This indicates that for each bi-polar construct the individual will choose that pole which is anticipated to give the best possibility of both defining and extending their personal construct system. The predominant aim is to define and extend the

personal construct system to optimize the anticipation of events in such a way as to meet the needs, interests and purposes of the individual.

This process of choice will be enhanced by the acquaintance of each participant in the teacher development programme, through personal reflection, discussion and reading, with a wide range of bi-polar constructs, which may be applied to their descriptions of effective teaching and learning.

The participant will choose those constructs, which define and expand their personal constructs systems, in ways that meet their future needs, interests and purposes. That is, the choice participants make between constructs will be based on their anticipated needs, interests and purposes in relation to effective teaching and learning. The future expectation of the participants will be a major influence in their review and revision of their construct systems. Hence, the teacher development programme should present alternative constructs, which take into account the probable future needs and purposes of the participants. As the participants were all expecting to gain greater responsibility for the administration of education, the programme should emphasise constructs relating to a wider perspective of education appropriate to these responsibilities.

#### The range corollary

This corollary states that any given construct is convenient or useful for a finite range of events only. That is, the range of experience to which a particular construct can apply is limited.

For a person to anticipate, successfully, they must locate an event within a dichotomous construct that is hierarchically integrated with other constructs. The located event will then be perceived in particular ways, as determined by its location within this hierarchy.

The choice of contrasting poles for a construct will limit the events to which the construct can be meaningfully applied. Thus the construct male/female is limited to events for which the similarities and differences between males and females are significant in that they assist in anticipating future experience.

The applicability of particular constructs will be restricted, therefore, to specific contexts. The transfer of the application of a construct from one context, say primary education, to another, such as secondary education, may require special strategies and, in particular, the development of a super-ordinate construct.

This indicates that the constructs employed by the programme participants may only be applicable to a limited experience of teaching and learning. Participants, in this case, will only be able to give restricted descriptions and interpretations of effective teaching and learning. To expand the construct systems used by the participants, it will be necessary to, as well as providing a wide range of alternative constructs, encourage them to develop super-ordinate constructs. This suggests discussing, and reflecting upon, constructs of wider applicability, and hence of a more general, and usually abstract, level. Provision must be made for the presentation of such constructs during the programme.

### The experience corollary

This corollary proposes that a person's constructive system varies as he successfully construes the replication of events. That is, successful construal occurs when the rehearsal of the event, such as teaching a particular lesson, in terms of a particular construct or constructs, allows the successful anticipation of the event. Thus, by reflecting on the lesson in terms of a particular set of constructs, the teacher is able to anticipate what will happen during the lesson. This capacity to anticipate is enhanced by rehearsal.

In addition, the individual, in rehearsing, adopts the system of constructs used on the basis of its success or failure in anticipating experience. This indicates that learning is anticipatory, involving the development of constructs which yield predictive success. A student's capacity to recognise, review, test and revise constructs in terms of their predictive success is, for these reasons, essential. That is, a critically reflective capacity must be developed.

This implies that the planning and conduct of the teacher development programme should emphasise the development of this capacity by stressing predictive success. This will be done by referring the interpretation of the participants descriptions of effective teaching and learning to their focus class, and testing and revising these interpretations, and the constructs on which they are based, in terms of their continuing experience with this focus class.

### The modulation corollary

This corollary proposes that the variation in a person's constructive system is limited by the permeability of the constructs within whose range of convenience the variants lie.

Personal Construct Theory emphasises the anticipation and prediction of experience. The focus is on the ability of the person to invent and re-invent construct systems that give both order and meaning to experience. For such theories, change is conceptualized as a process intrinsic to a persons' attempts to give order and meaning to experience. In this case, the two critical questions are:

- (i) Under what conditions can change occur, and
- (ii) when change does occur, what changes in a person's construction system?

According to the Organisation Corollary an individual's system of constructs is hierarchically organised. For a hierarchy, each level is subsumed by a higher, and more integrative, level. The higher the level of the construct within the hierarchy of the system of constructs, the higher the degree of abstractness of the form or structure of the constructs. That is, the degree of abstractness of the structure, or form of the construct, is determined by its relative position within the vertical organisation of the hierarchy.

Within this hierarchy, each construct will be linked to at least one other construct. The more inferential links a construct possesses the more extensive is the array of implicated constructs. That is, there is a greater number of possible implied constructs from a given construct. Applying this

construct to a particular incident makes possible a wide range of implied meanings or interpretations. The construct gives rise to a wide range of possible interpretations.

In addition, the greater the range of possible interpretations, which can be drawn from a particular construct, the greater its flexibility in subsuming or enfolding the full range of interpretations of a variety of events.

This property of a construct to both yield a wide range of interpretations, and to subsume or enfold interpretations of a variety of events, is called its permeability. A given construct in an individual's construct system may be more "abstract", that is, higher in the hierarchy, less inferentially linked and less flexible in encapsulating alternative interpretations. The permeability of the constructs within a person's construct system limits the range and flexibility of interpretations available from this construction system.

On these arguments, an individual's perception of a particular incident will be limited by the permeability of their system of constructs. A lack of permeability may prevent, effectively, an individual being able to give possible interpretations of this incident. In this case, the person may have to modify or adjust, their construction system so that the incident can be more effectively construed for predictive success. This can only done if there is at least one construct which is sufficiently permeable to accommodate at least some interpretations of the incident. Thus the relative permeability of the construct system determines what can be varied or

altered within the system. A highly rigid, impermeable system has little capacity for modification. An open, highly permeable system has considerable capacity for the interpretation and accommodation of experience.

The assumption of a holistic epistemology, and a touchstone approach to theory development, as described in chapter 1, implies that teacher development will be concerned with open-minded and intellectually critical reflection and inquiry. This approach to teacher development is supported, therefore, by the development of open and highly permeable personal construct systems.

The teacher development programme should make available to participants highly permeable, alternative constructs and construct systems, for reflection and discussion. These systems will need to be such that they are able to accommodate, at least in part, the experiences of the participants in teaching their focus class. That is, at least one construct must be able to yield a plausible interpretation of the teacher's experience in teaching their focus class. This implies that the programme should begin with the interpretations the participants give for effective teaching and learning for their focus classes, and the constructs these embody. These interpretations and constructs may then be adjusted and modified throughout the programme, ensuring that a degree of permeability is retained and, desirably, enhanced. Thus the monitoring of the progress of participants throughout the programme should be in terms of the focus class. Care will need to be taken to monitor individual construct systems, formally through repertory grid analysis, and informally through class and group discussions, for their adjustment towards a more



permeable, or open, system. Emphasising heuristic discussions in the programme will facilitate this informal monitoring.

#### The fragmentation corollary

This states that a person may employ, successfully, a variety of construction sub-systems, which are inferentially incompatible with one another. That is, predictive success may be obtained using a particular system of personal constructs, despite some of the underlying constructs conflicting. An individual may tolerate such incompatibility provided this does not interfere with their dominant needs, interests and purposes. If these needs, interests and purposes were to change, these conflicting constructs could not be tolerated. They would be incompatible with the individual's perspective of the future. In this case, mutual adaptation of the personal construct system, and this perspective, to eliminate these conflicts, would occur.

This suggests that the conduct of the teacher development programme must take into account the needs, interests and purposes of the participants throughout the programme. As these change so will the constructs used by the participants to interpret their descriptions of effective teaching and learning for their focus class. This implies a student-centred approach to the planning and conduct of the teacher development programme, and based on the focus class of each participant.

#### The commonality corollary

This corollary proposes that to the extent that one person employs a construction system which is similar to that used by another, their psychological

processes are similar to that other person. Thus, if the participants in the teacher development programme use similar constructs, their psychological processes are similar. When, for example, a group of participants negotiate an agreed set of constructs, and apply these to their descriptions of effective teaching and learning, it will be assumed that each participant is using the same psychological processes. This corollary has particular importance for the conduct of group or class negotiations during the teacher development programme.

#### The sociality corollary

This corollary proposes that to the extent to which one person construes the construction process of another, they may play a role in a social process involving the other person. In this context, Kelly defines a role as follows:

A role is a psychological process based upon the role player's construction of aspects of the construction system of those with whom he attempts to join in social enterprise.

(Kelly, 1955:97)

Thus the planning and conduct of the teacher development programme should facilitate and support social relating. It should enable all participants to construe the construction processes of all other participants. It must enable each participant to examine and reflect upon the variety of ways in which effective teaching and learning will be construed by other participants. This will be facilitated by sharing descriptions of effective teaching and learning, and the construct systems used to interpret them, with all participants in the programme.

(iv) Summary of the implications of these corollaries for the teacher development programme

The implications of these corollaries for the planning and conduct of the teacher development programme are as follows:

- (a) The programme, and its conduct, must be conceptualized in terms of the learning processes involved (construction corollary);
- (b) The emphasis will be on the participant describing effective teaching and learning for their focus class, and on construing interpretations of these descriptions (construction corollary);
- (c) The programme should emphasise the participants' anticipated experience of effective teaching and learning with their focus class (construction corollary);
- (d) The programme should emphasise the participant's personal descriptions of effective teaching and learning for their focus class (individuality corollary);
- (e) A student-centred approach to the conduct of the programme, and the monitoring of participant progress throughout this programme, must be adopted (individuality and organisation corollaries);
- (f) An emphasis on the frequent application of the participant's construct system to their descriptions of effective teaching and learning for their focus class (organisation corollary);
- (g) Using this application to review and revise these construct systems (organisation corollary);
- (h) Basing this review and revision on the elimination of inconsistencies and

- incompatibilities from these systems (organisation corollary);
- (i) Using the exploration of alternative constructs and construct systems, gained either through reading or through discussions with other course participants, to assist with the elimination of inconsistencies and incompatibilities (organisation corollary);
  - (j) Emphasising the exploration of differences and similarities within, and between, descriptions of effective teaching and learning (dichotomy corollary);
  - (k) Using these explorations to elicit bi-polar constructs as devices for interpreting these descriptions (dichotomy corollary);
  - (l) Basing the eliciting of these constructs on contrasting the similarities and differences of groups consisting of at least three semantic units, usually sentences, of the descriptions of effective teaching and learning (dichotomy corollary);
  - (m) Suggesting alternative bi-polar constructs which could be used to interpret these descriptions of effective teaching and learning (dichotomy corollary);
  - (n) The alternative constructs presented should recognise the anticipated needs, interests and purposes of individual participants (choice corollary);
  - (o) The alternative constructs provided, discussed and reflected upon, should have a wide range of applicability, and should support the development of super-ordinate constructs (range corollary);
  - (p) Emphasising the development of the participants' capacity to predict likely

success in providing effective teaching and learning for their focus class by referring descriptions of effective teaching and learning, and their interpretations, to the focus class, and by reviewing and revising these interpretations, and the constructs on which they are based, in terms of the participant's continuing experience with their focus class (experience corollary);

- (q) Open-minded, and intellectually critical, inquiry should be encouraged (modulation corollary);
- (r) The alternative constructs provided during the programme should be highly permeable, but should accommodate descriptions of effective teaching and learning for the focus classes (modulation corollary);
- (s) Basing the programme, initially, on descriptions of effective teaching and learning for the focus classes (modulation corollary);
- (t) Using group discussion and negotiations to achieve commonality of construct systems, where this is considered desirable (commonality corollary);
- (u) Facilitating social relating during the programme to help participants construe, and reflect upon, the construction systems of other participants (sociality corollary);
- (v) Recognising the changing needs, interests and purposes, particularly as these reflect conflicts within participant's construction systems, by adopting a student-centred approach to the planning and conduct of this programme (fragmentation corollary).

(v) Implications for the teacher development programme

(a) Implications for the conduct of the teacher development programme (P1)

From the above summary, it follows that programme participants will be involved in:

- (a) Describing effective teaching and learning ((iv)-(b),(d),(f))
- (b) Recognizing alternative, contrasting descriptions of effective teaching and learning ((iv) - (b),(r),(n))
- (c) Exploring alternative descriptions of effective teaching and learning ((iv) - (j),(m),(r),(n))
- (d) Sharing alternative descriptions of effective teaching and learning ((iv) - (o),(r),(t),(n),(u))
- (e) Negotiating alternative descriptions of effective teaching and learning ((iv) - (r),(t),(n),(w))
- (f) Reviewing and revising alternative descriptions of effective teaching and learning ((iv) - (c),(d),(g),(h),(j))

The summary statements, which give support to each of the phases, are indicated in the brackets following the phase.

There is strong support, also, for basing the programme on the descriptions of effective teaching and learning of the focus classes of the participants, for developing constructs using a triadic method, and for emphasising the elimination of inconsistencies and incompatibilities of constructs systems.

- (b) Implications for the reading content of the programme (P2)
- The acceptance of the corollaries of Kelly's (1955) Personal Construct Theory has implications for the selection, and use, of the reading content of the teacher development programme.

As previously argued, these corollaries in general, and the Organisation Corollary in particular, suggest the exploration of alternative construct systems. The purpose of this exploration is to eliminate inconsistencies and incompatibilities from the personal construct systems of participants in the teacher development programme. This exploration will be assisted if participants study, reflect upon, and discuss readings which emphasise a range of plausible alternative constructs. These alternatives will need to be plausible in that the participants are able to use these constructs to develop interpretations of effective teaching and learning for the focus classes, which fit within, are coherent with, their experience of teaching that focus class. This is supported by implications drawn from the Choice Corollary.

In using the readings of the programme, participants will explore the differences and similarities between alternative ways of describing effective teaching and learning. The readings provided should emphasise a range of such alternatives. They should be used by the participants to develop bi-polar constructs, which stress the similarities and

differences of descriptions of effective teaching and learning. For this purpose, particular approaches to these programme readings have been suggested. These are given in Appendix D of this study. In particular, these approaches are based on highlighting the similarities and differences between various descriptions of effective teaching and learning and, for the second approach to reading, the development and interpretation of repertory grids. This is supported by implications arising from the Dichotomy Corollary.

From the Range Corollary it has been concluded that the alternative constructs provided by the programme readings should have a wide range of applicability, and encourage the development of super-ordinate constructs. This implies that the readings given should consider effective teaching and learning at a general level, and for a wide range of teaching-learning contexts. That is, readings should not consider teaching or curriculum development, for example, for a particular subject only, or for primary education only. In this sense, the readings should consider general principles and procedures relating to teaching and learning. The consideration of such general principles and procedures should enhance the range of circumstances to which the readings can be applied, and the possibility of participants developing more general, or super-ordinate, constructs with which to interpret their



descriptions of effective teaching and learning.

It has been previously argued that the Modulation Corollary supports the encouragement of open-minded, and intellectually-critical, inquiry. The readings supplied to the participants should reflect such an approach to inquiry. In particular, they should be open in the sense of not supporting any particular bias in approaches to teaching and learning, and should stress the need to be intellectually critical of the arguments used. The readings should be written, therefore, to reflect an open-minded and intellectually-critical style of inquiry.

Moreover, and as suggested by the Modulation Corollary, the alternative constructs provided in the readings should be highly permeable. That is, the constructs should enable the participants to develop a range of possible interpretations rather than be limited to a small number of highly specified interpretations. At the same time, these interpretations should accommodate the descriptions of effective teaching and learning given by the participants.

Thus the readings supplied to the participants should provide and discuss a wide range of plausible alternative bi-polar constructs by emphasising the similarities and differences of various educational perspectives when applied to the problem of

describing effective teaching and learning. The readings should be written in a style which encourages open-minded and critical inquiry, and the development of superordinate constructs.

(c) Implications for monitoring and assessing changes in intelligibility (P3)

It has been argued that acceptance of the corollaries of Kelly's Theory of Personal Constructs (1955) implies a student-centred approach to the conduct, monitoring and evaluation of the teacher development programme. Thus monitoring and assessing the changes in the intelligibility of the descriptions of effective teaching and learning for the focus classes of individual participants will be undertaken during the programme. This procedure is supported by implications drawn from the Construction, Individuality and Organisation corollaries.

As previously discussed, the teacher development programme emphasises contrasting the similarities and differences between alternative descriptions of effective teaching and learning to produce sets of bipolar constructs. This emphasis is in accord with the Organisation, Dichotomy, Choice, Range, Experience and Modulation corollaries. The descriptions of effective teaching and learning for the focus class of a participant, and the bi-polar constructs which can be elicited from these descriptions, may be used to develop repertory grids on effective teaching and

learning. The analysis and interpretation of these grids will be used to monitor the changes in the intelligibility of these descriptions. The justification for this approach, and the procedures for undertaking it, are given, in Section 2.3 of this chapter.

(d) Implications for evaluating the effectiveness of the programme (P4)

As the corollaries of Kelly's Theory of Personal Construct (1955) have been shown to imply a student-centred approach to the teacher development programme, evaluation of the programme must be in terms of the changes to the individual's participating in the programme. As the programme is directed towards changing the intelligibility of the descriptions participants give for effective teaching and learning for their focus classes, then these changes should be the basis on which the programme is evaluated. For these reasons, the programme will be evaluated using an individual case study approach for a selection of participants. The case studies will concentrate on the changes in the intelligibility of the above descriptions. These case studies, and the procedures for their conduct, will be described in Chapter 6 of this study.

In addition, the effectiveness of the programme in meeting its purposes for the participants, as stated in the Introduction to this study, section C(1), will be evaluated using the participant's responses to a series of evaluation questions. This

evaluation is reported in Chapter 5 of this study.

## 2.3 THE DEVELOPMENT AND ANALYSIS OF REPERTORY GRIDS

### (i) Procedures for developing a repertory grid

A repertory grid is a matrix of elements and bipolar constructs. The grid is developed, firstly, by choosing a set of elements, and, secondly, by using these elements to elicit a set of bipolar constructs.

#### (a) Developing the elements of the grid

A repertory grid will be developed, usually, in relation to a specific problem, need, issue or task. The elements are chosen by the individual developing the grid. They must be personally important and meaningful to that individual. The total set of elements chosen must be representative of the normal discourse associated with the item being considered.

If, for example, the problem to be considered is that of describing effective teaching and learning for a focus class, the elements chosen may, for instance, be statements describing effective teaching and learning for that class. This set of statements should be representative of the entire discourse, which relates to teaching and learning for that class.

As well as being representative, the set of elements chosen should be as specific in meaning as is possible. In addition, the elements should be homogenous in the sense of being similarly defined. If, for example, the elements to be chosen are guidelines for effective teaching and

learning for the focus class, then each must fit a common notion of a guideline. An element stated as a stipulative rule, rather than a guideline, would not be acceptable as being homogenous with the remaining elements.

In developing a repertory grid, the elements may be supplied to those concerned. For the example given above, those developing repertory grids based on guidelines for effective teaching and learning could be supplied with a set of such guidelines. Similarly, a pool of elements could be supplied, and selections of elements made from this pool. Such a pool could, for instance, be established through a literature review for effective teaching and learning, by surveying a population of teachers, or through discussions with a group of teachers.

The choice of method for choosing elements depends upon (i) the purposes for developing the repertory grid and (ii) the knowledge, experience and skills of those developing the grid. If, for example, the aim is to produce a repertory grid for guidelines for effective teaching and learning for the purpose of having a group of teachers explore effective teaching and learning in relation to the teaching of a particular skill, then supplying a pre-determined set of guidelines would seem justified. Alternatively, if the purpose is to have teachers develop skills and experience in exploring a wide range of alternative guidelines for effective teaching and learning, allowing these teachers to develop such guidelines would seem to be appropriate, provided that they had the knowledge and skills to do so.

(b) Eliciting constructs for the grid

Kelly (1955) suggests that six assumptions underlie construct elicitation, in general. As described by Fransella and Bannister (1977), these are:

(i) The constructs elicited should be permeable  
This means that the person is able to apply the constructs to..... situations other than the three elements from which the construct has been elicited (using the triad method);

(ii) Pre-existing constructs should be elicited

While the person may, on occasions, develop a new construct during the process of elicitation, it is assumed that this does not often happen and that there is "some lingering degree of permanence in the constructs";

(iii) The verbal labels attached to the constructs should be communicable....;

(iv) The constructs elicited should "represent the subject's understanding, right or wrong, of the way other people look at things..." (Kelly, 1955: 230);

(v) The subjects should not dissociate themselves entirely from the elements or from the constructs elicited. They must be able to see themselves somewhere along the construct dimensions;

(vi) The constructs elicited should be explicitly bi-polar. By stating what a person or thing is, one is stating that which they are or is not.

(Fransella and Bannister, 1977: 14)

The first of the above assumes that the constructs are to be elicited by a triad method, as described below. Given this approach, it is further assumed that any construct generated in this way will be

applicable to contexts other than those immediately under investigation. Thus a construct developed by considering three statements describing effective teaching and learning should be applicable, not only to other descriptions, but also to similar situations which do not, however, directly involve such descriptions. They should, for example, be applicable to a range of teaching and learning contexts. In eliciting constructs, increasing permeability, and hence range of applicability, is to be sought. In this way, that set of constructs, which is maximally applicable to the descriptions of effective teaching and learning, will be obtained. This is consistent with the purposes of the teacher development programme being undertaken, and to which this study refers.

In stressing that pre-existing constructs are to be elicited, Kelly assumed that individuals have a "degree of permanence" in their construct systems. That is, the process of eliciting constructs will not usually develop new constructs. Rather, it will serve to uncover pre-existing constructs. For teachers, in the above example, the procedures undertaken in developing constructs related to descriptions of effective teaching and learning should elicit a stable and permanent set of individually inherent constructs, and not generate new ones.

An important feature of the constructs elicited must be their communicability. That is, the languaging of the constructs must afford ease and clarity of communication within the group concerned. Stating constructs relating to

describing effective teaching and learning in terms unfamiliar to teachers is not advisable.

Kelly's fourth assumption, that the constructs elicited should

represent the subject's under-standing,  
right or wrong, of the way people look  
at things...

(Kelly, 1955: 230)

indicates the need to elicit constructs which focus on the frames of reference likely to be used by other teachers, rather than those which are idiosyncratic to a particular teacher. This implies the need to share proposed constructs with other teachers, to test, for example, their validity as ways of interpreting descriptions of effective teaching and learning and, if necessary review and revise them. Elicitation procedures should include opportunities for sharing, reviewing and revising constructs. Notwithstanding the above, the constructs elicited, for instance, in relation to describing effective teaching and learning should not only fit the understanding that other teachers may have of this, but also that of the teacher from whom the constructs were elicited.

The final assumption that constructs should be explicitly bi-polar is supported by Shaw who states

A construct is a bi-polar dimension  
which to some degree is an attribute or  
property of each element.

(Shaw, 1980: 9)



That is, each construct must express a contrast between two poles. It will be critical that constructs elicited, for example, in relation to descriptions of effective teaching and learning, reflect such contrasts for the teachers concerned. Thus, a particular construct may contrast student motivation as intrinsic or extrinsic. This construct is valid only if the teachers concerned are able to understand this contrast in terms of their own descriptions of effective teaching and learning.

In terms of developing a repertory grid based on a set of statements describing effective teaching and learning, the implications of the above assumptions for eliciting constructs are:

- (i) Highly permeable constructs are to be sought;
- (ii) The constructs elicited will be stable and permanent for the individual;
- (iii) The constructs are communicable, and sharing, reviewing and revising constructs during the elicitation procedures is important;
- (iv) The constructs must be applicable to the individual's descriptions of effective teaching and learning;
- (v) The constructs must provide bi-polar contrasts for all of the teachers using them.

#### (c) Methods of Construct Elicitation

A range of methods has been developed for generating constructs. Depending upon the purposes for developing the repertory grid, and the context in which it is being developed, the constructs may be either supplied or elicited. This section considers procedures for eliciting constructs.

Kelly (1955) described six procedures. These were

(i) The minimum context card form

For this method, three elements were presented and the individual asked to specify some important way in which two of them are alike but different from the third. This similarity is then recorded and indicates the implicit pole. The way in which the third element is different is then recorded as the contrast pole. The implicit and contrast poles form the first construct.

Further triads of elements are then selected and the procedure repeated. The number of constructs developed depends on what is considered appropriate for the particular context being investigated. Not all triads need necessarily be used to develop constructs.

(ii) The full context form

In this case each element is written on a card and displayed before the individual. The individual is asked to prepare important senses in which groups of the elements are alike. Two elements are then selected and the way these are similar recorded. Further cards are then sequentially added to the group. As each element is added, the individual is asked whether this element belongs to the same category as the first two. If not, then the difference is used as a basis for stating the contrast pole, and the similarity of the first two for stating the implicit pole. This procedure is continued until sufficient constructs have been generated.

(iii) The sequential form

For this procedure the elements are represented as triads, as for the minimum context form, rather

than as a group as for the full context form. The procedure, however, differs from that of the minimum context form in that the selection of the triads of elements proceeds systematically by changing the elements of the triad one at a time and sequentially. If the first triad of elements is 1, 2, 3, then the second is formed by replacing 1 with 4, and so on.

(iv) The Self-identification form

The elements are presented in the sequential form but the element "myself" is always included in the triad. This is designed to ensure that all constructs are personally relevant, but applies only when the elements are clearly based upon differing people or the roles they occupy.

(v) The personal role form

This procedure is similar to the self-identification form, but uses varying personal contexts to generate different constructs. Again, this is applicable only where the elements are personally-based.

(vi) Full context with personal role feature

This combines the full context form with the personal role form.

In investigating how teachers construe effective teaching and learning the minimum context, the full context and the sequential form are valid procedures. Each of these is based upon the triad method of eliciting constructs. Kelly based the triad method on his views on how constructs are first formed. But as the constructs being elicited are already established in the individual's repertoire there appears to be no reason why three elements need to be used. Epting et al (1972) found that more explicit contrasts

could be obtained by asking the individual for the opposite or contrast of the likeness which had been discerned between any two elements. Thus two elements, or a dyadic procedure, can be used.

(vii) Using dyads of elements

This procedure is simpler to use than the triadic method. For each dyad an important way in which the elements are similar and a further important way in which they are different are identified. These indicate the implicit and contrasting poles respectively.

(viii) By laddering

This procedure is used to elicit increasingly super-ordinate constructs; that is, constructs of a higher order of abstraction than those elicited through dyads or triads of elements. It involves eliciting constructs in the usual manner, and then asking the individual which pole of each construct best fits their perception of the elements in relation to this construct and why this pole of the construct is chosen rather than the other pole. The answer to this last question gives rise to another construct super-ordinate to the first side. This construct also has a preferred pole. Asking why this pole is preferred will again generate a construct super-ordinate to the previous construct.

As this laddering procedure is repeated with each successive sub-ordinate structure there will be a tendency for the same super-ordinate constructs to be reached.

Alternatively, it has been shown by Honikman (1976), for example, that questions of how and what by the investigator asked in relation to

preferred poles, generate more specific constructs. Both procedures permit a layering of constructs in terms of their levels of generality.

(ix) Other procedures

These include constructing pyramids and through self-characterization. Both of these methods relate to personal role analysis, and are therefore not relevant to the contexts being considered in this study.

As it is planned to limit the number of elements in each grid for each teacher to not less than 6, and not more than 10, and as these elements will be statements describing effective teaching and learning for the focus class of each participant, a sequential form procedure using triads of elements is appropriate for eliciting constructs.

(ii) An example of developing a repertory grid

(a) Elements and constructs

The problem or issue to be investigated is represented by a set of elements. From these elements a set of constructs is elicited. The grid is a matrix formed from these elements and constructs.

The elements in the grid are always items of personal experience. As such they can be used to elicit constructs for the grid. The relevance of the grid to the purpose for which it is being used will depend upon the types of elements it contains. The best set of elements are those which enable the person to explore their own patterns of personal meaning, to become more fully aware of their patterns of thoughts and feelings, as these relate to his or her purposes.

A personal construct may be seen as a dimension of personal meaning, and the system of personal constructs defines a person's psychological space. The structure of personal meaning within which the items of experience acquire their significance, one in relation to the other, defines this space. If two items of experience are thought or felt to be similar, then they lie close to one another in the personal construct system. The use of words such as 'space', structure and 'lie close' indicate that the idea of a system of personal constructs is closely analogous with that of physical space. This analogy must be recognized and retained only as long as it is helpful in investigating personal meaning.

#### A preliminary exercise

The following exercise will be helpful for the programme participants in gaining an initial understanding of how a repertory grid is developed.

*"Think of six people who you have recently taught. Obtain six cards of say 10cm x 6cm. Using these cards write one of your learners' names on each of the six cards. Shuffle them, and label then E1 to E6.*

*Deal out cards E1, E2 and E3 and consider each of the learners named by these cards, in turn. Try to imagine yourself in a learning/teaching situation with each of them in turn. Now think about them as learners. Which two of the three are most alike as learners, and which one is most different as a learner from the other two? Put the two 'similar learners' together and separate the card for the 'different learner' from this pair.*

*On paper write a brief description of what it is about the pair which leads you to put them together. Label this C1 P1 (Construct 1,*

pole 1). When you have done this write a brief description, on a second piece of paper, of what it is about the third person that makes them different as a learner. Label this C1 P2.

Put CP1, CP2 and cards E1, E2 and E3 aside. Deal out E4, E5 and E6 and repeat the procedure. This procedure will then yield C2 P1 and C2 P2.

Repeat the procedure using the triads of cards such as E1, E3 and E5, and E2, E4 and E6 thus generating C3 P1 and C3 P2, C4 P1 and C4 P2, C5 P1 and C5 P2, and C6 P1 and C6 P2. These construct cards should then be displayed as follows:

C1 P1	-	C1 P2
C2 P1	-	C2 P2
C3 P1	-	C3 P2
C4 P1	-	C4 P2
C5 P1	-	C5 P2
C6 P1	-	C6 P2

These construct cards display ways you think and feel about learners. The constructs so obtained, and the elements they refer to, form the matrix of a repertory grid. This matrix may be displayed as in figure 1 on page 109.

For the first construct (C1 P1 - C1 P2), consider each element E1 - E6 in turn. Each element is assigned to one pole or other of the construct. Thus if E1 is considered to most nearly fit C1 P1 then this element is assigned to this pole of the first construct. Assignment to the first (emergent) pole, C1 P1, is indicated by a tick (✓), whilst assignment to the second (implicit) pole, C1 P2, is shown by a cross (X). In this way all elements E1 - E6 are assigned to one or other pole of the first construct giving the following typical pattern:

	E1	E2	E3	E4	E5	E6
C1 P1	✓	✓	X	✓	X	✓
						C1 P2

The remaining constructs are similarly assigned to each of the elements enabling the following grid to be completed.

	E1	E2	E3	E4	E5	E6	
C1	P1						C1 P2
C2	P1						C2 P2
C3	P1						C3 P2
C4	P1						C4 P2
C5	P1						C5 P2
C6	P1						C6 P2

Figure 1: Repertory Grid

Procedure for eliciting a repertory grid

In this example, the steps taken to elicit the repertory grid agree with those proposed by Thomas and Harri-Augstein (1985). These are:

1. Decide upon the purpose of the grid.
2. Identify the types of elements which best allow this purpose to be achieved.
3. Elicit the elements.
4. Elicit a personal construct.
5. Assign the elements to the construct.
6. Elicit further constructs and assign the elements to them.

The entire procedure for eliciting a repertory grid has been summarized, in algorithmic form, by Thomas and Harri-Augstein (1985) as follows:

Analysing the repertory grid

A range of procedures is available for this analysis. For the purposes of this study, a correlation analysis based upon matching pairs of columns or rows will be described. With this procedure a correlation matrix is completed for the elements, and a further matrix is developed for the constructs.



The repertory grid when completed gives a matrix of ticks (✓) and crosses (X). This matrix may be displayed as in Form A.

For elements A and B count the number of occasions when the assignments (✓ or X) match for the various constructs. In the attached example there are 4 instances of this matching. This number is then entered in the A/B space for the correlation matrix of elements on Form B. This procedure is repeated until all pairings of elements has been exhausted.

The same procedure is then repeated for the constructs, and the correlation matrix of Form B completed.

FORM B

CORRELATION MATRICES FOR REPERTORY GRIDS

Correlation matrix for elements

Elements	A	B	C	D	E	F	G	H	I	J
A		4	8	5	3	5	5	7	6	2
B			2	5	5	5	4	5	2	8
C				3	4	5	6	7	6	2
D					6	4	3	2	7	5
E						2	3	3	5	5
F							7	4	5	5
G								7	6	4
H									3	5
I										2
J										

Correlation matrix for constructs

Constructs	1	2	3	4	5	6	7	8	9	10
1		4	3	6	8	4	7	6	4	4
2			3	4	2	6	5	8	4	6
3				2	5	7	4	1	9	4
4					6	4	5	6	4	4
5						2	5	4	4	6
6							5	4	8	4
7								5	5	3
8									6	5
9										4
10										

These matrices give an indication of the pairs of elements and pairs of constructs which are closely related. An inspection of Form B indicates, for example, a high correlation between elements A and C and constructs 1 and 5.

A procedure designed to re-order the grid to focus on such correlations was developed by Thomas et al (1985) at the Centre for the Study of Human Learning at Brunel University. This procedure consists of the following steps:

- (a) The correlation matrix for the elements is inspected and the pairs of elements which have the highest correlation identified.
- (b) Cut up the grid into its component columns making sure that each column is headed with the name of the element.
- (c) Align the strips with the highest match. Continue until the elements are re-ordered placing elements with similar ratings next one another.
- (d) Re-write the re-ordered grid.
- (e) Re-write the re-ordered grid, with the ratings of each construct reversed. This is done because, since constructs are bi-polar, it is possible that a high degree of match may be obtained if the construct was reversed.
- (f) Inspect the grid to determine the pairs of constructs which have a high match.
- (g) Cut the grid into rows, and align the rows with the highest match.
- (h) Re-order the grid by placing constructs which are similar next to one another.
- (i) Re-write the grid.

The total pattern of relationships should now be clearer.

A variation of this procedure will be used when analysing and interpreting grids for changes in the intelligibility of descriptions of effective teaching and learning given by programme participants.

(i) Monitoring changes in the intelligibility of participants' descriptions of effective teaching and learning

As previously argued, the intelligibility of descriptions of effective teaching and learning can be considered in terms of their coherence and plausibility (chapter 1, section 1.3). Coherence is concerned with the consistency and co-referencing of the set of statements, or semantic units, used to describe effective teaching and learning, and hence with the elements of the repertory grids developed by participating teachers.

The plausibility of these descriptions is concerned with their reasonableness. This is assessed in terms of the interpretations the teacher places upon the particular descriptions of effective teaching and learning. These interpretations are reflected in the system of constructs, or bi-polar statements, developed from the given set of descriptive statements or elements.

Each repertory grid consists of a set of elements and a set of bi-polar statements or constructs. The elements are sentences describing effective teaching and learning, whilst the bi-polar statements (constructs) have been derived from these elements using the triad method as previously described. For each such grid, correlation matrixes for both the elements and the bi-polar statements (constructs) may be completed.

(a) Correlation of elements

Consider the following repertory grid.

Bi-polar statements		Elements						Bi-polar statements	
Initial statement		A	B	C	D	E	F	Emergent statement	
C1P1		✓	✓	X	✓	X	✓	C1P2	
C2P1		✓	✓	X	✓	X	X	C2P2	
C3P1		✓	✓	✓	X	✓	✓	C3P2	
C4P1		✓	✓	✓	X	✓	✓	C4P2	
C5P1		✓	X	X	✓	✓	X	C5P2	
C6P1		✓	✓	✓	✓	X	✓	C6P2	

In this grid a tick (✓) indicates that the element most nearly matches, in meaning, the initial statement, whilst a cross (X) indicates that it matches more closely with the emergent statement.

Placing a tick (✓) in the box for element C and the bi-polar statements C3P1 - C3P2 indicates that element C matches more closely with the statement C3P1. A cross would indicate a matching with C3P2, the emergent statement.

As elements A and B match for 5 of the 6 bi-polar statements with same pole of the statement, that is, with the initial statement, there is a high correlation between elements A and B.

The number of such matches is taken as a measure of the correlation between the elements. In this case the correlation between A and B is 5.

Correlation scores for all possible pairs of elements can then be computed, and represented on the following matrix.

Correlation matrix of elements

Elements	A	B	C	D	E	F
A						
B		5	3	4	3	4
C			4	3	2	5
D				1	4	5
E					1	2
F						3

(i) Consistency of descriptions

If, in the above grid, all elements were matched with the initial poles of the bi-polar statements in all cases, then the grid would contain only ticks ( $\checkmark$ ), and all correlation scores would be 6. In this case, the given description of effective teaching and learning can be interpreted, without exception, in terms of the initial poles of the set bi-polar statements. That is, the elements of the grid can be interpreted entirely within the perspective of effective teaching and learning defined by the set of the initial pole statements. In this sense, the elements of the grid provide a description, which is consistent with this perspective, and, in particular, does not contradict it. Thus the description provided by elements A to F is consistent with the perspective

of effective teaching and learning deprived by statements C1P1, C2P1, C3P1, C4P1, C5P1 and C6P1.

Where correlation scores are less than the maximum possible score (in this case 6), then the elements do not give a fully consistent description. The degree of consistency of the description provided by the elements is indicated by the overall level of the correlation scores in the matrix.

Suppose a repertory grid contains  $n$  elements and  $m$  bi-polar statements. Then, the maximum value for the correlation between any pair of elements is  $m$ . The number of pairs of elements is  $\frac{n(n-1)}{2}$ . Thus the correlation matrix contains  $\frac{n(n-1)}{2}$  scores, each within the range of 0 to  $m$ . Hence the average correlation score for a pair of elements

$$= \frac{\text{Sum of all correlation scores}}{\frac{n(n-1)}{2}}$$

$$= 2 \frac{(\text{sum of all correlation scores})}{n(n-1)}$$

If this average score is then divided by the maximum possible score, in this case  $m$ , then the resultant ratio will have a value between zero and one. This value will be an indication of the degree of consistency of the elements of the grid in describing effective teaching and learning. This ratio will be designated the coefficient of consistency for the elements of the grid.

For the grid given above, the calculation of the coefficient of consistency is as follows:

Number of elements ( $n$ ) = 6

Number of bi-polar statements ( $m$ ) = 6

Hence the number of pair of elements

$$= \frac{6 \times 5}{2}$$

$$= 15$$

The sum of the correlation series = 49

Hence the average correlation score for a pair of elements

$$= \frac{49}{15}$$

$$= 3.26$$

Hence as the maximum possible correlation score is 6 (n=6) the correlation of consistency

$$= \frac{3.26}{6}$$

$$= 0.54$$

This coefficient will be computed, as a measure of the consistency of the description provided by the elements of the repertory grid, for all repertory grids completed by the participants in the teacher development programme. These grids will relate to descriptions of effective teaching and learning for the respective focus classes of the participants. The coefficient of consistency will be a measure of the consistency of such descriptions, and will be used to indicate changes in this consistency, which may occur for participants throughout the programme.

(ii) Co-referencing of the elements

If the elements of a repertory grid are to give a coherent description of effective teaching and learning they must not only be consistent, as described above, but the elements should refer to one another. Through such co-referencing, the



elements can form a coherent network or description. For this to be the case, the referents of each element must refer to the referents of at least one other element in the grid. In this way, all elements in the grid can be linked through co-reference.

Consider a repertory grid with the following elements as descriptions of effective teaching and learning.

- A. Good teaching provides students with the opportunity to measure their progress.
- B. Good teaching involves individual and group work, equally.
- C. Good teaching involves communicating in a manner suitable for the maturity level of the child.
- D. Good teaching involves negotiation of the curriculum with students.
- E. Good teaching encourages the development of self-motivation.
- F. Good teaching draws in a wide range of experiences and resources.

For these elements, the referents contained within the various elements are as follows:

Element	First referent	Second referent
A	R1 Student(s) Individuals & groups  Manner of communicating  Curriculum  Self (student) Experiences and resources	R2 Progress
B		Work
C		Maturity level of child
D		Students
E		Motivation
F		Range

All elements, except F, contain a reference to students. Therefore, elements A to E can be linked, explicitly, through their reference to students. They each describe conditions supportive of a student-centred approach to teaching and learning. In referring to groups, as well as individuals, and by suggesting equal individual and group work, element B specified a condition only partly supportive of a student-centred approach. In this case, it would be expected that elements A, C, D and E would correlate strongly as they can be explicitly co-referenced to one another. Element B would be expected to correlate less strongly with this set of elements.

Element F refers to the provision of a wide range of resources and experiences. As resources and experiences are not referred to in any other elements, element F does not directly refer to any other elements. If, however, the element correlation matrix score indicated a high correlation between elements F and A, for example, then this indicates that the relationship between elements A and F must be implicit; that is, implied by the participant in completing the grid.

Hence a study of the referents of the elements of the repertory grid, with reference to the correlation matrix of the elements, may be used to establish the extent to which the elements co-refer explicitly, to one another, and the extent to which relationships between them are perceived by the author of the grid to be implicit.

For each repertory grid developed by a teacher participating in the teacher development programme, an analysis of the referents of the elements used will be used to assess the extent of explicit co-referencing of the elements, and to determine the extent to which relationships between the various elements are perceived as being implicit.

- (c) Correlation of constructs
- (i) Plausibility of the description of effective teaching and learning  
For a particular repertory grid, the set of elements gives a description of effective teaching and learning. The triad method will be used to elicit bi-polar statements, which reflect the similarities and differences between the various elements. This set of bi-polar statements forms a framework for interpreting the given description of effective teaching and learning.

The correlation of the bi-polar statements can be considered in a similar way to that of the elements. For the above example, the following correlation matrix was derived.

Correlation matrix for bi-polar statements

Statements	C1	C2	C3	C4	C5	C6
C1	-	5	3	3	3	5
C2		-	2	2	4	4
C3			-	6	2	4
C4					2	4
C5					-	2
C6						-

In this case C3, and C4 have a correlation score of 6. Thus the pattern of matching all the elements with the various poles of the bi-polar statements is identical for C3 and C4. If all statements had a correlation score of 6 for all cases, then the pattern of matching all the elements with the poles of the bi-polar statements would be identical. That is, the elements would be matched with one set of polar statements, with one statement being selected from each pair of bi-polar statements. In this case, this set of statements would form a clear interpretation, in terms of the focus class, of the given description of effective teaching and learning. Under these circumstances, this description may be said to be highly plausible in that it can be clearly interpreted by the participant in terms of their focus class.

If the correlation score for two sets of bi-polar statements is zero, then this indicates that if the poles of one of these statements were reversed, the correlation score would then be a maximum. Thus a low correlation score indicates a high correlation between the initial pole of one bi-polar statement and the emergent pole of the other, or vice versa. Both high and low scores indicate a high correlation, whereas scores intermediate within the range of possible scores show a low correlation.

As above, high and low correlations are an indication of the plausibility of the description of effective teaching and learning in terms of the interpretational framework provided by the set of bi-polar statements of the repertory grid.

The degree of correlation may be measured by the difference between the median(s) of the possible correlation scores and the actual score. In the example given above, there are 6 bi-polar statements. The median score is 3, giving a range of 3 units both above (4, 5 and 6) and below (0, 1 and 2) these scores. When the scores are so adjusted the revised matrix is as follows:

Adjusted correlation matrix for bi-polar statements

Statements	C1	C2	C3	C4	C5	C6
C1		2	0	0	0	2
C2			1	1	1	1
C3				3	1	1
C4					1	1
C5						1
C6						-

The sum of the adjusted correlation scores is then 16. As there are 15 possible pairs of statements, the average score per pair of statements is  $16/15$ . If this average is then divided by the maximum possible score from the median(s), i.e. 3, this gives a value of 0.36. This figure gives an indication of the degree to which the bi-polar statements are correlated. Perfect correlation would yield a coefficient of 1.0, whilst the complete absence of correlation would give a coefficient of 0.0.

In general, this plausibility coefficient can be calculated as follows:

The plausibility coefficient

Let M be the number of pairs of bi-polar statements and D the maximum difference of the

construct correlation score from the median score(s).

The coefficient of plausibility

= Sum of the adjusted construct correlation scores  
M x D

The coefficient of plausibility is a measure of the extent to which the elements of the grid give a plausible description of effective teaching and learning. That is, it indicates the plausibility of the description in terms of the consistency of the interpretations which can be derived from it. A set of elements, which gave a highly plausible description of effective teaching and learning, would be seen to be so depending upon the consistency of the interpretations, which can be derived from it for the focus class.

(d) Analysis and interpretation of repertory grids

Each participating teacher will complete three repertory grids describing effective teaching and learning as this applies to their focus class. For each of these grids, each teacher will compute correlation matrices for both the elements and constructs of the grid, and will write a detailed interpretation of each grid based on these matrices.

These matrices will allow coefficients of consistency and plausibility to be computed. An analysis of the referents of the elements will be used to establish the extent of explicit co-referencing between the elements of the grid. When used in conjunction with the correlation matrix of the elements, the analysis of co-reference will indicate which elements are seen as implicitly related by the author of the grid.

Hence, for each completed repertory grid, on descriptions of effective teaching and learning, the following information will be available:

- (1) a list of elements;
- (2) a list of bi-polar statements (constructs);
- (3) a completed repertory grid;
- (4) correlation matrices for both elements and constructs;
- (5) computations of the coefficients of consistency and plausibility;
- (6) the teacher's analysis and interpretation of (1) to (5).

This information will be used to examine the co-referencing of elements, their consistency in terms of their correlation with one another and the coefficient of consistency, and their plausibility in terms of the correlation of the constructs and the coefficient of plausibility. This examination will lead to a discussion of the intelligibility of the description of effective teaching and learning provided by the elements of the grid. A comparison of the three grids completed throughout the teacher development programme will facilitate the monitoring and assessing of changes in the coherency and plausibility, and hence intelligibility, of the descriptions of effective teaching and learning.

## 2.4 DEVELOPING A THEORETICAL AND PROCEDURAL BASIS FOR THE TEACHER DEVELOPMENT PROGRAMME

### (i) Applying a touchstone approach

This study is concerned with a teacher development programme, which is based on the problem of describing effective teaching and learning.

The planning and conduct of the teacher development programme involves, therefore, finding solutions to the following problems:

- (a) The problem of finding and establishing procedures for the conduct of the programme (P1);
- (b) The problem of development a suitable reading programme (P2);
- (c) The problem of monitoring and assessing changes in the intelligibility of descriptions of teaching and learning (P3);
- (d) The problem of evaluating the programme (P4);

In chapter 1 of this study the epistemological assumptions for the programme, and their methodological implications, were discussed. This discussion was undertaken on the assumption of a holistic epistemology and a touchstone approach to theory development. These discussions had implications for the solution of each of the above problems. These implications are described in section 1.5 of this study.

In section 2.1 of this study, Kelly's Theory of Personal Construct (1955), and their implications for the conduct of the teacher development programme, have been discussed. Again, these discussions have implications for the possible solution of the above problems. These implications are given in section 2.2 (v) of this chapter.

Thus both chapter 1 and this chapter, are discussions of the same set of problems, but from different theoretical perspectives, namely



epistemological holism and a touchstone approach to theory development, and Kelly's Theory of Personal Constructs (1955).

As discussed in chapter 1, a touchstone approach to theory development is based upon finding a coherent accommodation of competing theories by considering their agreements and disagreements. Moreover, as the different theoretical perspectives developed in each of chapters 1 and 2 have been used to suggest solutions to the same set of problems, they can be considered to be competing theories. As these theoretical perspectives are in competition, a touchstone approach can be used to develop a more coherent theory, and procedures, for the solutions of the above problems. In this way, a theoretical and procedural basis for the teacher development programme will be developed.

A touchstone approach to theory development will be applied, in turn, for each of the above problems by considering the overlaps between the two theories, and their implications as given in chapter 1 and this chapter.

(a) Conducting the teacher development programme

The implications for the conduct of this programme as discussed in chapter 1 are given in section 1.5 (i).

In summary, the conduct of the programme was seen to involve the following phases for all participants;

- The describing phase
- The recognizing phase
- The exploring phase

The sharing phase  
 The negotiating phase  
 The reviewing and revising phase

These phases are also implied by the analysis of the implications of Kelly's Theory of Personal Constructs undertaken in Section 2.2 (v) (a) of this chapter. Thus both theoretical perspectives support the conduct of the programme according to the above phases. These phases, as described in Section 1.5 (i), will be used throughout the conduct of the teacher development programme.

(b) Implications for the reading content of the programme

The implications for the reading content of the programme of epistemological holism, and the adoption of a touchstone approach to theory development, have been described in chapter 1, section 1.5 (ii) of this study. The implications of the acceptance of the corollaries of Kelly's Theory of Personal Constructs (1955) for the reading content of the programme have been described in section 2.2 (v) (b) of this chapter of this study. In both cases, it is implied that the reading content should provide and discuss a wide range of plausible, alternative bi-polar constructs by emphasising the similarities and differences of various educational perspectives when these are applied to the problem of describing affective teaching and learning. Furthermore, the readings should be written, and presented, in a style which encourages open-minded and intellectually-critical enquiry.

As these implications are supported by both theoretical stances given above, and as a touchstone approach to theory development is being applied, they will be adopted in developing the reading content of the programme.

(c) Implications for monitoring changes in intelligibility

The implications of adopting epistemological holism, and a touchstone approach to theory development, for monitoring changes in the intelligibility of descriptions of effective teaching and learning are described in chapter 1, section 1.5 (iii). In particular, it was argued that the notion of intelligibility entailed the contributing factors of coherence and plausibility. Furthermore, the coherence of a description involved its consistency and its co-referencing.

In section 2.2 (v) (c) of this chapter the implications of accepting the corollaries of Kelly's Theory of Personal Constructs (1955) have been summarized. In particular, the adoption of these corollaries implies a student-centred approach to monitoring the intelligibility of the descriptions participants give of effective teaching and learning for their focus classes, using the eliciting of bi-polar constructs from these descriptions, and the development of repertory grids for their analysis and interpretation.

In section 2 of this chapter, procedures for developing such grids, and for their use in the monitoring of the intelligibility of descriptions, is given. These procedures, and their justification, are based upon conceptualizing intelligibility as entailing the contributing concepts of coherence and plausibility, and coherence as involving the concepts of co-reference and consistency. The procedures developed in this section can be used to monitor intelligibility, as described in chapter 1, section 1.4.

In chapter 1, section 1.3 (v), it was shown that, on the assumption of epistemological holism and a touchstone approach to theory development, the analysis of the similarities and differences between competing theories, using a triad method to elicit bi-polar statements, can be undertaken using repertory grid analysis. In section 2.3 of this chapter, it was shown that eliciting of bi-polar constructs, using a triad method to identify the differences and similarities between statements describing effective teaching and learning, can be used to facilitate a repertory grid analysis of these descriptions and their interpretations.

Thus each of the theoretical perspectives described in chapter 1 and this chapter of this study support the monitoring and assessing of the intelligibility of descriptions of effective teaching and learning in terms of their coherence (co-

referencing and consistency) and plausibility using repertory grid analyses and interpretations of these descriptions.

For the theoretical perspectives described in chapter 1, the elements of such grids would be competing theories, that is, statements proposing alternative solutions to the same problem, namely the description effective teaching and learning. The elements would be, therefore, statements describing effective teaching and learning. For the theoretical perspective described in this chapter, the elements are also statements describing effective teaching and learning. For both perspectives, the elements of the repertory grid are statements describing effective teaching and learning.

For the theoretical perspective of chapter 1, a triadic approach is applied to elicit bipolar statements. These are the initial and emergent, or contrasting, statements. For the second theoretical perspective, the application of a triadic method to eliciting constructs yields bi-polar constructs. These are the initial and emergent, or contrasting, constructs. In the first place, the bi-polar statements can be interpreted as proposing contrasting theories relating to effective teaching and learning. For the second perspective, the bi-polar construct can be interpreted as proposing contrasting constructs, which are part of the participants' personal construct system. Whilst both approaches to interpreting the

bi-polar statements elicited from the elements of the grid have been shown to be valid, this study will focus on the former approach. That is, the bi-polar statements elicited will be interpreted as stating competing theories associated with describing effective teaching and learning.

On these bases, the monitoring of the changes in the intelligibility of descriptions of effective teaching and learning given by participants in the teacher development programme will be undertaken using statements describing effective teaching and learning for the focus class as the elements of a repertory grid, eliciting bi-polar statements from these elements using a triad method, and analysing this grid and interpreting the bi-polar statements as statements of competing theories of effective teaching and learning. The procedures for doing this are described in chapter 4 of this study.

(d) Implications for evaluating the effectiveness of the programme for teacher development

The implications of adopting the theoretical perspective described in chapter 1 for the evaluation of the effectiveness of the teacher development programme have been described in section 1.5(d) of this chapter. In particular, this perspective implies that an evaluation of the effectiveness of this programme should focus on the changes in descriptive intelligibility for individual participants, rather than the programme as a whole. In addition, as each participant has a unique background and experience in teaching and

learning, an evaluation of the programme should concentrate on the intelligibility of descriptions given for the focus classes of participants. This suggests the use of individual case studies as a basis for evaluating the programme.

The implications of assuming the corollaries of Kelly's Theory of Personal Constructs (1955) for the evaluation of the programme are described in this chapter, section 2.3 (iv) (d). These corollaries imply the adoption of a student-centred approach to evaluation. This is in agreement with the case study approach suggested above.

The evaluation of the effectiveness of the programme for teacher development will be undertaken using a series of case studies. This evaluation will be described in Chapter 6 of this study.

In addition, the programme will be evaluated in terms of its effectiveness in meeting its purposes, as stated in Section C of the Introduction, for the programme participants. That is, its effectiveness as an approach to teacher development will be evaluated. This is done in Chapter 5.

(ii) Theoretical and procedural basis of the teacher development programme

The theoretical basis for this study is derived, using a touchstone approach, from the assumption of epistemological holism, a touchstone approach to theory development, and the corollaries of Kelly's Theory of Personal Constructs (1955). The

procedural basis has been derived from this theoretical basis by considering the implication of the latter for the conduct, reading content, monitoring and evaluation for a teacher development programme focused on the problem of describing effective teaching and learning for a focus class.

These procedures are applied to:

- (a) the conduct of the programme as described in chapter 4;
- (b) the reading content of the programme as described in chapter 3;
- (c) the monitoring and assessing of changes in the intelligibility of participants descriptions of teaching and learning, as described in chapter 6 and
- (d) the evaluation of the programme as an approach to teacher development, as described in chapter 5 of this study.



## SECTION II

## CONDUCTING THE TEACHER DEVELOPMENT PROGRAMME

Introduction

In Chapter 3, the development of the reading content for the programme is described and illustrated. In chapter 4, the conduct of the programme is described.

### CHAPTER THREE

#### DEVELOPING THE READING CONTENT OF THE TEACHER DEVELOPMENT PROGRAMME

##### 3.1 INTRODUCTION

##### 3.2 READING MODULES

##### (i) Module A: Contrasting views of learning and teaching

A1: Morgan's (1975) epistemological and psychometric models of the learner

##### (ii) Module B: Curriculum development and knowledge

B1: Curricula and liberal education

B2: P.H. Hirst's Forms of Knowledge (1974)

B3: Intellectual development and Forms of Knowledge

##### (iii) Module C: Approaches to curriculum development

C1: Curriculum development and objectives

C2: Curriculum development and student abilities

##### (iv) Module D: Contrasting perspectives of teaching and learning

### 3.1 INTRODUCTION

This chapter describes, and illustrates, the development of the content of the reading units for the planned teacher development programme. These units include consideration of a range of approaches to curriculum planning and development, some philosophical issues which underlie these approaches, and some of the implications of these issues for effective teaching and learning.

The approaches considered have been selected on the grounds that each has, at some recent stage, been central to debates concerning curriculum planning and development, and that this range of approaches gives, for the purposes of this study and the theses being examined, an adequate coverage of such discussions.

In making this selection, it is not being suggested that such approaches are separate and discrete from one another. Each approach indicates an emphasis being given, in curriculum planning and development, to a particular concept. Recently, for example, the concept of objectives appears to have been de-emphasised in favour of the concept of process, and the concept of negotiation has now emerged strongly as a key notion in curriculum planning and development. Such emphases do not deny the conceptually eclectic nature of curriculum planning and development. For this study, a curriculum approach will be taken to mean planning and developing curricula with an emphasis on a specific concept.

For the purposes of this study, the following approaches have been selected:

- (i) curriculum development and liberal education;
- (ii) curriculum development and knowledge;
- (iii) curriculum development and objectives;
- (iv) curriculum development and student abilities;
- (v) curriculum development and student-centredness;
- (vi) curriculum development and educational processes;
- (vii) curriculum development and educational discourse;
- (viii) curriculum development and integration.

For each of these approaches, a reading has been prepared. Each of these readings will be considered by each participant in the teacher development programme. Their totality formed the reading content for this programme.

Each of these readings has been developed from a survey of recent and pertinent literature relating to each approach. From these surveys a precis of some of the philosophical issues which underlie each of these approaches has been prepared. This precis has been written to highlight these philosophical issues and, in particular, to facilitate their statement as pairs of dichotomous (bi-polar) statements, or dichotomies. These issues will be critical to discussions concerning the educational justification of these various approaches to curriculum planning and development, and include, for example, those issues implied by the objective/relative dichotomy, as this relates to the nature of knowledge.

As each participant in the teacher development programme studies, in turn, each of these readings they

will be asked to identify, firstly, the philosophical issues discussed in each reading.

Once these have been identified for a particular approach, each participant will be asked to state each philosophical issue as a pair of dichotomous, or bi-polar, statements. Thus, for instance, the course unit which discusses curriculum development and knowledge may highlight debates concerning the intrinsic or extrinsic nature of intellectual development. This philosophical issue must be stated by the course participant as a pair of bi-polar statements. All such issues will then be stated as pairs of bi-polar statements, or dichotomies.

Each dichotomy will be considered in relation to the course participants focus class. The procedure for selecting this class, and giving an initial description of effective teaching and learning for it, is described in Appendix E to this study. Each student will be asked to state the implications, in general, and then, specifically, for their focus class, of each statement of the various dichotomies. In this way they will be required to reflect, initially, on the practical implications for effective teaching and learning of each of the identified dichotomies.

Each of the approaches to curriculum development list above will be considered in this way.

For the purpose of the teacher development programme the reading content has been divided into four modules of study. These modules, and their sub-sections, are as follows:

Module A: Contrasting views of learning and teaching

A1: Morgan's (1975) epistemological and psychometric models of the learner

Module B: Curriculum development and knowledge

B1: Curricula and liberal education

B2: P.H. Hirst's Forms of Knowledge (1974)

B3: Intellectual development and Forms of Knowledge

B4: Objectivity, truth and inter-subjective agreement

B5: "Knowing how" and "knowing that"

B6: Polanyi, objectivism and tacit integration

B7: Summary of issues identified

Module C: Approaches to curriculum development

C1: Curriculum development and objectives

C2: Curriculum development and student abilities

C3: Curriculum development and student-centredness

C4: Curriculum development and educational processes

C5: Curriculum development and conversation in education

C6: Curriculum development and integration

C7: Summary of issues identified

Module D: Contrasting perspectives of teaching and learning

It must be noted that the emphasis in developing these readings is to identify, and not resolve, some pertinent philosophical issues. Moreover, it is not being suggested that these issues are either necessarily, or practically, resolvable. The view will be taken that, in practice, teachers and learners adopt

positions which are intermediate to the extreme of positions through which these issues are usually represented. Thus, for example, neither a totally objectivist or a totally relativist position in relation to knowledge will be adopted, usually.

In preparing these readings, the implications identified, in relation to the reading content of the teacher development programme, in chapter 2, section 2.3 (ii)(b) have been taken into account. In particular, a wide range of approaches to curriculum development is considered. Within the reading for each of these approaches, several different educational perspectives for this approach are considered. By relating these perspectives, where possible, to effective teaching and learning, and by referring to the focus classes of the participants, a wide range of plausible, alternative educational perspectives will be provided. These perspectives will form a basis for the participants' descriptions of effective teaching and learning, and for their eliciting of an extensive range of bi-polar constructs.

By presenting a wide range of alternative educational perspectives, and by giving a balanced emphasis to each of these, an attempt has been made to write all readings in an unbiased, but open-minded and intellectually critical style. This approach is supported by the provision of a range of bi-polar statements, drawn from each particular reading, at the conclusion of that reading.

For the purpose of illustrating the development of these reading units, units A, B1, B2, C1, C2 and D have been included in the text of this study. The remaining units are included as Appendix H.

### 3.2 Reading Units

#### 3.2 (i) MODULE A: Contrasting views of learning and teaching

Much current educational debate concerns the fundamental differences, which underly the views of learning held by teachers and educators. Many would argue that a major difficulty is that, at any time, issues in education have tended to be dominated by one view of learning. In addition, as any proposals with respect to approaches to teaching would seem to be closely linked to a particular view of learning, a particular teaching style may pre-dominate. Moreover, the model of the learner may strongly influence not only curriculum content, but also assessment and evaluation. Discussions concerning teaching approaches, and curriculum development and evaluation, must involve considering the underlying model of learning, and hence teaching.

Furthermore,

Those involved in education often adopt rigidly opposing positions which mitigate against a more constructive and flexible approach. There is now a growing recognition that alternative models can co-exist and enrich rather than detract from development in education.

(Pope and Shaw, 1981: 223,224)

Education and schooling has been traditionally concerned with the transmission of selected aspects, particularly knowledge and values, of the culture of the society. Such aspects were to be internalized by the students. Teaching had this internalization as its main aim, and sought to achieve this aim through students imitating adult conduct. In this sense, and



perhaps in the extreme, Skinner appears to have seen teachers as architects and builders of student behaviour, using curricula based upon analyses of adult behaviour in certain cultural contexts, which have been selected by the adult community, as being desirable, for transmission to the young. In these circumstances, human behaviour is to be explained in terms of respondent and operant conditioning. In particular, learning is to be evaluated in terms of changes in overt performances, rather than in thoughts and feelings. Specifically, learning becomes a change in the probability of response under pre-determined constraints of operant conditioning. The student's role as a learner is as a passive receiver of knowledge rather than an active participant in the construction of meaning.

A view of education based upon the student as a passive recipient of a selection of the culture of the society appears to have been dominant in Western educational thought. Furthermore, this perspective has been given strong support by the acceptance by educationalists of some psychological theories, and particularly those of cognition and motivation, which stress the passivity of the mind. Such theories include associationism, behaviourism, stimulus-response psychology and contingency theories.

Current educational debate, however, seems to indicate a renewed interest in considering the mind as an "active processor". On this basis, meaning is constructed through the interaction of man with his environment. The emphasis is on the construction of meaning and the interpretation of one's own experiences. Education should, according to this view, and as proposed in differing senses by such writers as

Rousseau and Dewey, be directly related to the interests and needs of the student. Importantly, motivation is to come from the student, rather than from the knowledge imposed on the student. For this approach, the teacher acts as a guide in assisting the student to reconstruct and re-interpret, in terms of personal relevance and significance, the knowledge presented. This approach to learning seeks to give full recognition to the active involvement of the learner in coming to understand their experience of the world in terms of personally relevant interpretational frameworks.

(Morgan's (1975) epistemological and psychometric models of the learner provide a convenient basis for contrasting alternative perspectives of teaching and learning in terms of dichotomous or bi-polar statements. These models can be used to make the teachers participating in the teacher development programme aware of possible assumptions, relating to teaching and learning, which may be assumed within, or implied by, their descriptions of effective teaching and learning. The consideration of these models in terms of possible pairs of dichotomous or bi-polar statements relating to teaching and learning will be used to prepare the programme participants for eliciting such pairs of statements through the study of the reading units prepared for each selected approach to curriculum development.)

#### A1: Psychometric and Epistemological Models and the Learner

Two contrasting models of learning, involving the passive recipient and the active participant, and their implications for curriculum development, teaching and motivation, and assessment of student progress, are summarised by Kathryn Morgan in Nyberg (1975) as the

psychometric and epistemological models of learning, respectively. These are as follows:

For the psychometric model:

- (1) The child is regarded as an object, more particularly, as a deficit system whose passivity is a necessary condition for being initiated into public thought forms;
- (2) The child is regarded as 'having' intelligence in the sense of a specific property which can be measured by objective tests;
- (3) The world of knowledge is regarded by those who adopt the psychometric model as composed of pre-existing theoretical forms into which the child must be initiated;
- (4) The pre-existence of such forms and the possession of such by the educator legitimizes a highly didactic form of pedagogy;
- (5) As a possessor of such theoretical forms, the educator assumes the role of societal surrogate one of whose main roles is to assess the growing congruence of the child's thought forms with the pre-existing standards;
- (6) Educational development consists of growing rationality as the child moves away from the concreteness of his immediate world towards the increasingly abstract theoretical forms;
- (7) Educational achievement consists in progressing towards increasingly specialized and highly discipline-bound subject-matter and is measured in terms of objective evaluative criteria such as behavioural objectives.

-Characteristics of the epistemological model include the following:

- (1) The child is regarded primarily as a subject, that is, as a being who is actively involved in constructing and arranging his knowledge of the world in terms of personally-relevant interpretational schemata;
- (2) The main property which the child is thought to possess and which is most relevant to the educational setting is the non-quantifiable property of curiosity;
- (3) Following the leads of Piaget and Bruner, the world of knowledge is regarded as composed of thought forms which are in a constant process of construction and which are dialectically related to the development of individual subjects interacting with socially-approved and socially-distributed knowledge;
- (4) Emphasizing the constructive aspect of human knowledge and placing value on intellectual initiative legitimizes a pedagogy which is highly interaction oriented;
- (5) As a similarly constructive, growing subject, the educator assumes the role of social model in the process of knowledge construction, one of the main responsibilities of which is the heuristic channeling of the pre-existing curiosity of each individual student;
- (6) Successful pedagogy consists not in the measuring of the achievement level of the students but in the ability of the teacher to apprehend and recreate the intentionality and subjective reality of the students so as to provide greater individual stimulation;
- (7) Although educational achievement is measured in distance from starting point to present level of development, this is a highly individualized measure. The child is essentially treated as a

self-regulative being insofar as he controls the sequence and pace of experience. In many cases, he controls the content of the experience as well, insofar as his interests and desires are often the crucial curriculum determinants in the setting. As such evaluation will be more diffuse, non-quantifiable, highly subjective, and more holistic in tone since all dimensions of the student's subjectivity are regarded as worthy of concern in the educational setting. (Nyberg, 1975:125-8)

(Whilst these two models represent theoretical extremes, they do serve to highlight the philosophical issues, which will be identified later in this chapter, and to provide a possible basis for a system of personal constructs to be used by teachers to examine and describe their experience as teachers, and that of their students as learners.)

According to these models, the child may either be regarded as object, or as a subject. This raises the question of "objectivism" being applied to human beings. An emphasis on objectivism leads to consideration of human beings in terms of their properties as objects. Research into human learning, for example, then concentrates on identifying properties or characteristics of individuals, which are generally associated with what is regarded, in the context of this study, as effective learning. One such property is that of intelligence. This property is to be measured using objective tests; that is, tests which have universal validity, ideally.

Choosing to describe human learning in terms of the objective properties of the learner leads easily to the quantification of these properties. This, in turn,

lends itself to the notions of surplus and deficiency with respect to these properties. Hence an apparent incapacity to learn is described and explained in terms of deficiency of objective properties of the learner. In Morgan's (1975) terms, the learner is regarded as a deficit system.

If, however, the learner is regarded primarily as a subject, as being actively involved in constructing knowledge and personally-relevant interpretations, then the emphasis in describing and explaining human learning will be on the personal qualities of the individual as displayed within particular contexts. That is, no attempt will be made to isolate universally valid qualities or properties, such as intelligence, through which human learning can be understood. In this case, intelligence is a qualifier of the particular individual action in a specific context. The learner will be said to have acted intelligently in this particular context, this statement not necessarily having any implications for alternative situations.

Moreover, the emphasis on the subjectivity of the individual implies that the learner is active, whilst an emphasis on the learner as an object, and hence as a deficit system, implies passivity. These, and other, fundamentally different perspectives of the learner arise through differing emphases on objectivism and subjectivism.

Thus the basic philosophical issue of the balance between objectivism versus subjectivism has critical implications for a teacher's perspectives of the learner.

In the psychometric model, the student is to be initiated into public thought forms. This implies that the process of learning is one of initiation, which in turn appears to legitimize a form of teaching which has as its over-riding purpose this initiation. Thus student interest and needs may well be disregarded on the grounds that the only necessary criterion of successful teaching is the completion of the initiation. The means of teaching, and of learning, may be totally subordinated to the end of initiation.

Again, this initiation is to be into pre-existing public thought terms; that is, into bodies of knowledge which are objective in the sense of being public, and hence removed from any variation through individual interpretations, and pre-existing in the sense of being independent of prevailing social and cultural interpretations. This contrasts with the epistemological model, in which the concern is for the construction by the learner of personally-relevant frames of reference adapted to the needs and interests of the learner in the particular social and cultural context in which they find themselves at any particular time. The philosophical issue of epistemological objectivism and relativism relates, directly, to these contrasting views of the learner and learning. The former approach implies learning to be the acquisition, by initiation, of objective knowledge, whilst the latter implies the construction of personal understanding, and hence of socially and culturally relevant knowledge.

For the psychometric model, the teacher will be required to possess the theoretical thought forms, or bodies of objective knowledge, and to act in such a way that the learner's thought forms grow increasingly

congruent with them. The extent of this congruence will be assessed by the teacher in terms of the standards intrinsic to these bodies of knowledge.

The emphasis of the psychometric model on objectivism, objective knowledge, initiation, and congruence with pre-existing standards, legitimizes a highly didactic form of teaching. On the other hand, the emphasis within the epistemological model on subjectivism, personal interpretation within socially-approved and distributed knowledge construction, and the heuristic channeling of pre-existing curiosity, tends to legitimise a highly interaction-oriented style of teaching which values individual initiative.

For the psychometric model educational development is assessed in terms of the student's rationality as indicated by a capacity to re-produce, at ever-increasing levels of abstraction, public thought forms. In so doing, the student will progress away from knowledge of the concreteness of his immediate surroundings to the privacy of increasingly abstract thought forms. This progress will be assessed in terms of the pre-existing and public standards of each of the thought forms. That is, educational development proceeds according to, and is assessed in terms of, public and external norms and criteria.

In contrast, student development, as indicated by the epistemological model, is not referenced to external norms and criteria, but proceeds according to the channeling of the non-quantifiable, and pre-existing, property of the student, namely curiosity. Development occurs according to individual stimulation. The two models therefore represent contrasting perspectives of educational development, the



psychometric model representing development in terms of external norms pre-existing within public bodies of knowledge, and the epistemological model portraying development in terms of the norms of the individual, as these come into play in the individual, on the basis of pre-existing curiosity, seeking personally-relevant interpretations of their experience. The issue of internal and external referencing of educational development will be discussed later in this reading programme.

For the psychometric model, achievement is progressing towards increasingly specialized and highly discipline-bound subject matter. In this case, educational achievement will be measured in terms of objective criteria, such as behavioural objectives. That is, the assessment of educational achievement for this model will be through an emphasis on objectivism. Assessment of achievement for the epistemological model will, on the other hand, stress subjectivism. Considering the notion of educational achievement for these models raises the issue of objectivism and subjectivism.

Finally, the approach to assessment and evaluation for the psychometric model is through the progressive development of more highly specialized, abstract, quantifiable, and objective criteria. That is, it proceeds according to a reductionist approach. Evaluation for the epistemological model is more diffuse, non-quantifiable, highly subjective and more holistic.

### 3.2 (ii) Module B: Curriculum development and knowledge

This section is concerned with those approaches to curriculum planning which have as their central feature

the selection of knowledge; that is, those approaches based on selecting that knowledge which is most worthwhile for inclusion in a curriculum. The educational justification of the selection of particular knowledge, and the rejection of other knowledge, has usually been based on arguments concerning either the intrinsic worth of some knowledge, or its utilitarian value.

Each of these arguments will be examined in this section. This examination will begin with a critical discussion of the development of the concept of liberal education. This will lead to a consideration of the relationship of the nature of knowledge and to the concept of liberal education, and hence to a discussion of Hirst's proposals with respect to Forms of Knowledge, and their implications for curriculum development. On these bases, some of the philosophical issues central to the above approaches to curriculum development will be identified and discussed.

#### B1: Curricula and liberal education

Prior to the conclusion of the War of Independence in 1776, the traditions of a liberal education, as they had developed in England, were shared, effectively, by both England and America. The class structure, which characterised English society at this time, appeared to rest upon hierarchical assumptions based on hereditary. These assumptions, and the consequent social structure, remained substantially unchanged in England. However, the unsettling political and social ideas, which were imported to America, and which found expression in newly won independence, had a marked effect on the underlying assumptions and values of American society.

In England, the regulative effect of the social class structure remained. As a consequence, curricula tended to cater for the particular needs of the various social classes, and to re-affirm these needs. Although political representation was formalised, this representation remained "virtual" in the sense that:

representation has nothing to do with obeying popular wishes, but means the enactment of the national good by a select elite.

(Pitkin, 1967: 170)

Hence, questions of the relationship of education to the social structure of a society did not arise and, in particular, the relationship of such questions to political and social leadership were not considered to be of importance. Curricula debate, strongly influenced by the traditions of Oxford and Cambridge universities, was mainly concerned with curriculum content, and the place of the classics and the sciences in a liberal education. Discussions on liberal education were about the education of the upper classes and, as observed by Newman,

Its object is nothing more than intellectual excellence ... Knowledge is one thing, virtue another.

(Kerr, 1976: 110-1)

In supporting this view Reid states:

The social and institutional forces of the time prevented controversies about man and society and directed them into discussions of what content best trained the mind for 'intellectual excellence'.

(Reid, 1980: 254)

Furthermore, each period of identifiable social change would seem to have embodied a re-interpretation of liberal education in terms of its social and political mores. In Georgian England, for example,

It was given the immense burden of rendering men and women sociable, tolerant and broad-minded in situations where also every encouragement was given to the pursuit of personal advantage.

(Rothblatt, 1976: 102)

On the other hand, in Victorian England, and within the context of industrialism, liberal education was directed towards problems within this society and those who could provide speculative solutions, which gave the then often turbulent society a sense of direction and purpose.

During the nineteenth century the great universities, through the churches, became the dominant institutional bases of liberal education. Liberal education thus ceased to be personally defined in terms of such things as books, travel and works of art, and became tied to institutions.

The study of the development of an alternative notion of liberal education in America may be assisted by considering the evolution of the major universities in that country. Whilst these may have been concerned, initially, with the development of practical skills, they were also concerned with

a reconstruction of institutionalized cognitive activities, creating a structure oriented towards discovery growth, inquiry: 'research'.

(Wegener, 1978: 57)

Moreover, and in contrast to institutions in England, those in America were to incorporate the ideas of a political democracy. Educational institutions would be open to all, and would be directed towards the benefit of all members of society. This is not to devalue, necessarily, intellectual excellence, for

It becomes expedient for promoting the public happiness that those persons whom nature had endowed with genius and virtue, should be rendered by liberal education worthy to receive and able to guard the sacred deposit of rights and liberties of their fellow citizens.

(Reid, 1980: 257)

Curriculum decisions were to be made within the principles and procedures of a political democracy, and to be ultimately justified on a utilitarian basis. That is, curriculum decisions were substantially based within the socio-political context.

Thus two perspectives of liberal education emerged - the one based upon intellectual excellence developed through the acquisition of knowledge and understanding, and the other on principles determined within the socio-political context.

Rothblatt (1976) suggest that the debate as to the nature of liberal education, as suggested by these differing perspectives, focuses on three central issues, each of which give rise to necessarily ambiguous arguments. These are:

- (a) differences which stem from the arts and the sciences;
- (b) differences arising from the relationships of arts and sciences to religion and politics, and
- (c) difficulties about the old and new in knowledge most worth having.

The management of liberal education is concerned, therefore, with the management of differences arising from decisions made about the curriculum for liberal education. That is, questions relating to curriculum decisions for liberal education are not logically resolvable. Liberal education is an ideal and, as such, is characterised by unresolved differences, and

hence cannot assume any permanent embodiment. Similarly, Rothblatt sees the central problem of liberal education as "the relation of reason and argument to social values and alternative realities" (1976: 176).

For Hirst (1974) liberal education is defined as the pursuit of unalterable realities to which education must address itself through the study of the Forms of Knowledge as discussed in Knowledge and the Curriculum (1974). In contrast, Schwab (1969) suggests that the essence of liberal education is:

the management of an inherently ambiguous idea in the interest of shaping engaged moral agents.

(Reid, 1980: 253)

(Note: Students participating in the programme will have previously read "Liberal education and the nature of knowledge", Hirst (1974).)

For Hirst (1974), moral action is to be based on the knowledge gained through initiation into that Form of Knowledge, Moral Knowledge. For Schwab, moral actions are shaped through knowledge gained by participating in attempts to resolve the inherent ambiguities of a liberal education. In the first instance, coming to know how to act morally means being able to reason and argue axiomatically within the Forms of Knowledge. For Schwab, coming to know is the progressive development of alternative realities through social interaction, with each such reality being characterized by rules and norms of moral action.

Attempts to recognize these two differing perspectives within school curricula, that is to retain

intellectual excellence as an aim whilst paying due attention to social and political aims, such as equipping students for their participation in a democratic society, may highlight the need to find ways of accommodating the philosophical differences underlying these perspectives within an educational rationale for curricula. Some such differences will be identified in the remainder of these readings. The philosophical assumptions underlying these differences will then be expressed as dichotomies, or bi-polar statements.

## B2: P.H. Hirst's Forms of Knowledge

P.H. Hirst's views on the nature of liberal education, and its epistemological basis, are substantially contained in Knowledge and the Curriculum (1974). The seminal essay within this collection is "Liberal Education and the Nature of Knowledge", which was first published in Philosophical Analysis and Education (1965) (Routledge and Kegan) 1965) and edited by R. Archambault. Throughout this paper, Hirst is concerned with providing an adequate characterisation and justification of liberal education. The search for a definition of such an education is, according to Hirst, justified on the basis that to deny the value of such a search would be to bring into question the worthiness of the pursuit of rational knowledge and

... to question the pursuit of any kind of rational knowledge is in the end self-defeating, for the questioning itself depends upon the very principles whose use is finally called into question.

(Archambault, 1965: 113)

Education is to be centrally concerned with developing the pupil's knowledge, rationality or intellect.

Hirst (1974) appears to have misgivings about the absolute nature of his proposal when he states that, with respect to liberal education and its dependence on the Forms of Knowledge, it

... is simply about the present state of affairs but that state of affairs is not to be regarded as either a transient articulation of a merely socially relative concept of knowledge, or the latest expression of an absolute and invariant framework implicit in knowledge.

(Hirst, 1974: 95-6)

For Hirst, "the logically most fundamental objectives of all are those of the cognitive kind, on the basis of which, out of which, or in relation to which, all others must be developed" (Hirst & Peters, 1970: 62). Liberal education is based on "the nature and significance of knowledge itself" and "ever since the Greeks has been repeatedly located in man's conception of the diverse Forms of Knowledge he has achieved" (Hirst, 1974: 32).

For the Greeks, the development of the concept of liberal education was dependent on the significance of the acquisition of knowledge to the development of the mind, and the relationship of this knowledge to reality. Knowledge was significant in that its pursuit was essential to the ultimate development of the mind. It was asserted that through the "right" use of reason "the mind comes to know the essential nature of things, and can apprehend what is real and immutable" (Hirst, 1974: 31). Thus knowledge can be progressively attained, and will be incorporated into a comprehensive hierarchical structure, the pattern of which is formed as knowledge of reality is developed. Education is based, therefore, upon a metaphysical conception of knowledge. This view is justified in that not only is



it based upon what is true, and is such that it has value to the individual in the development of mind, but also in that it is essential to man's understanding of how he ought to live. Thus, for the Greeks, the significance of the concept of liberal education arises from the position given to knowledge in basic metaphysical doctrines for unifying the concepts of mind and reality.

Both the definition, and the justification of Hirst's concept of a liberal education, are dependent upon his thesis that knowledge is structured into forms. "By these is meant, of course, not collections of information, but the complex ways of understanding experience, which man has achieved, which are publicly specifiable, and which are gained through learning" (Hirst, 1974: 35). It is maintained that, by the sharing of conceptual schema and their associated public symbols, such an understanding becomes possible, and acquires objectivity in the sense that there is public consensus as to the meaning of symbols. That is, the objective expression of assertions relating to experience in terms of these symbols permits the development of public criteria against which the truth or validity of such assertions may be assessed. Continued and progressive assessments enable the probing and (public) description of more complex experiences, and thus the further development of knowledge. Hirst contends that it is only in terms of the symbols detailing the structure of such knowledge that emotional experiences or mental attitudes and beliefs become intelligible. Thus to acquire knowledge is to become aware of experience as being structured and organised, and made meaningful in a specific way. This structure does not, Hirst considers, arise because the mind has pre-determined patterns of functioning -

to have a mind is to have experience according to conceptual frameworks.

Each developed form of knowledge is characterised by the following related distinguishing features:

(1) They involve certain central concepts that are peculiar in character to the form. For example, those of gravity, acceleration, hydrogen, and photosynthesis characteristic of the sciences; number, integral and matrix in mathematics; God, sin and predestination in religion; ought, good and wrong in moral knowledge.

(2) In a given form of knowledge these and other concepts that denote, if perhaps in a very complex way, certain aspects of experience, form a network of possible relationship in which experience can be understood. As a result the form has a distinctive logical structure. For example, the terms and statements of mechanics can be meaningfully related in certain strictly limited ways only, and the same is true of historical explanation.

(3) The form, by virtue of its particular terms and logic, has expressions or statements (possibly answering a distinctive type of question) that in some way or other, however indirect it may be, are testable against experience. This is the case in scientific knowledge, moral knowledge, and in the arts, no questions are explicit and the criteria for the tests are only partially expressible in words. Each form, then, has distinctive expressions that are testable against experience in accordance with particular criteria that are peculiar to the form.

(4) The forms have developed particular techniques and skills for exploring experience and testing their distinctive expressions, for instance the techniques of the sciences and those of the various literary arts. The result has been the

amassing of all the symbolically expressed knowledge that we now have in the arts and the sciences.

(Hirst, 1974: 44)

Thus, it is proposed that the domain of human knowledge can be differentiated into a number of logically distinct "forms", none of which is ultimately reducible in character to the others.

On the basis of these characteristics, it is proposed that there are the following distinct disciplines or forms of knowledge: mathematics, physical sciences, human sciences, history, religion, literature and the fine arts, and philosophy.

"Structure of knowledge" theories, such as that proposed by Hirst, are characterised by arguments that knowledge is structured into broad fields or categories called, for example, disciplines, communities of discourse, forms of knowledge, or realms of meaning. Such theories propose that conceptual structures are necessarily the prime determinants of an intellectual education. Gardner (1972) has suggested a "structure-of-knowledge" theory on the basis of a need to provide a theory of education which is value-free, unified, consistent and non-realist. It is further proposed that there is a link between structured knowledge and education. This relationship may take one of two forms:

(i) Knowledge is structured through communication and hence is available for learning;

(ii) To think is to use conceptual structures, i.e. there is a logical relationship between the conceptual structure of the knowledge and the understanding of it.

Hirst (1974) proposes that the conceptual structures to be used in the development of rational thought are those which are characteristic of the Forms of Knowledge. Consequently the Forms of Knowledge are to be the basis of intellectual education.

According to "structure of knowledge" theories a discipline has an internal structure of key concepts (substantive structure), and rules of inference and truth criteria (syntactic structure). These structures are used in rational thought. Disciplines may, sometimes, be grouped together on the basis of similarity of internal structures e.g. physical sciences. The content of the curriculum should exemplify, and illuminate, these structures.

An important consequence of such theories is that there are no principles of thought, and truth criteria, to be found outside these disciplines, against which the validity of these proposals could be judged. That is, there are no trans-disciplinary criteria for truth. This difficulty usually gives rise to either a transcendental argument, such as that proposed by Hirst with respect to rational man, or to the proposal of metaphysical principles, as for Plato and the theory of forms. The major difficulty of a "structure-of-knowledge" theory occurs when the move is made from the description of the structures to a recommendation for curriculum selection. For those who support such a theory the claim is that the key concepts, truth criteria and rules of inference of the disciplines are necessary and sufficient for the development of a rational mind. From this claim at least the following key questions arise:

- (i) What is meant by necessary?

- (ii) If one uses structures of knowledge, other than those found in the disciplines, is one non-rational?
- (iii) What is meant by sufficient? Do we only need the disciplines for rational thought?
- (iv) Do the disciplines represent a structure within language and social convention, or structures within the world of experience? Or are the disciplines the product of innate structures of the mind which are common to human beings? That is, do the structures of the disciplines have the status of Kantian categories and are, therefore, pre-conditions for objective thought.

The range of alternatives for the structures of the disciplines include:

- (a) That they are culturally relative;
- (b) That they are conventional as in language, or tradition;
- (c) That they are correct and "in the world";
- (d) That they are correct and "in the mind".

If they are "in the mind", they are either pre-dispositions for objective thought or logical pre-requisites for objective thought. Thus "structure" must be conventional or "in the world" or "in the mind".

If the structures are to be outside our introspective or reflective experiences, it must be asked how it is that we are able to gain access to such structures. Is this world of external experience structured in such a way as to form the basis for the structure of disciplines? Walkling (1979) indicates the logical impossibility of answering these questions by reference to an external world.

As Hume wrote, "it is in vain to ask, whether there be body or not" since the questioner "cannot defend his reason by reason". That is, we cannot even temporarily suspend the conceptual framework in which we have minds, to see whether the world is as that framework makes it seem".

(Walkling, 1979: 65)

The question of the logical necessity of the structures of the disciplines cannot, on this basis, be settled by referring to an external reality.

As suggested previously, if the structures of knowledge are to be intrinsic to the mind then they may either be psychological pre-dispositions or logical pre-requisites for objective thought. That is, either human beings have, in common, an innate set of pre-dispositions which structure thought and experience and hence knowledge, or having objective experience at all may mean that there are particular logical constraints on the possible arrangement of ideas and hence of knowledge. In both cases such innate capacities would be logically prior to experience.

Any discussion of the possibility and necessity of such capacities must take place in terms of their public symbolism, either as language or other symbol systems. But any innate structuring capacity, which may be manifested as a pre-disposition to learn a particular language, for example, is not evidence of similar capacities for other symbol systems. Evidence for a pre-disposition with respect to language or mathematics is not evidence for the belief that a similar capacity exists for the natural sciences.

"Structure-of-knowledge" theorists would appear to be arguing that, in the first instance, it is the apparent temporal permanence of the regularity of the

experienced world which persuades us that it exists outside consciousness. In this context to be "rational" will be to be aware of, and take into account in terms of behaviour, the constancy and regularity of the experienced world. Rational knowledge of this world must be given in terms of its structures. That is, there is a relationship between the structures of knowledge and the structure of the experienced world or reality. The form of this relationship will be dependent upon the view taken of reality. Four possibilities seem to be suggested.

Firstly, it may be proposed that there is a world external to our consciousness to which we have access, and that the structures of the disciplines directly represent the structures of this "real" world. That is, knowledge is to be viewed objectively as a unique representation of the "real" world, being independent of, and abstract from, the observer, and invariant in time. Alternatively, it could be argued that, as before, there is an external world to which we have access, but that the structures of the disciplines are conventions. Such conventions have the effect of making the world appear coherent, but such appearances, and hence conventions, are socially constructed and culturally determined. This is to express a relativist view of knowledge. Thirdly, it may be proposed that we only have access to our personal impressions. In this case, the structure of the disciplines must, as previously discussed, arise either from innate structures of the mind or the logic of experiencing. The structure of the disciplines are then the public ways of making these impressions coherent.

Finally, we may only have access to our impressions, and the structures of the disciplines are

conventions through which our impressions assume regularity.

This section raises the following issues:

- (i) Epistemological objectivism and relativism;
- (ii) The fundamental basis of the perceived regularity and coherence of experience - is the basis for this regularity in the mind, in experience, in our impressions, or in a common and shared external reality?

Hence the critical philosophical questions raised in this section are:

- (i) Is knowledge absolute and objective, or socially constructed and culturally determined, that is relative?
- (ii) Are the structures of the disciplines
  - (a) culturally relative;
  - (b) conventional as in language, or tradition;
  - (c) in an external world;
  - (d) in the mind?

Each of these questions can be expressed in terms of a contrasting philosophical position. These positions may be stated as pairs of bi-polar statements or dichotomies. These include the following pairs:

Knowledge is trans-cultural./ Knowledge is culturally relative. Knowledge is not socially constructed i.e. objective./ Knowledge is socially constructed, i.e. is subjective. The structures of the disciplines are culturally relative./ The structures of the disciplines are acultural. The structures of the disciplines are conventional, as in language./ The structures of the disciplines are not in the conventions of language. The structures of the disciplines are traditional./ The structures of the disciplines are non-traditional. The structures of the disciplines correspond to structures



in the experienced world./ The structures of the disciplines correspond to structures in the mind.

### 3.2 (iii) Module C: Approaches to curriculum development

#### C1: Curriculum development and objectives

During the 1950's and 1960's, a new enthusiasm developed for the precision and specificity apparently offered by the planning of curricula in terms of educational objectives. This development was perhaps led by an upsurge in the interest in the application of analytic philosophy to the analysis of educational concepts in the United Kingdom, and paralleled in the United States of America by the increasing influence of Bloom et al (1956) Taxonomy of Educational Objectives. I: Cognitive Domain, and by the acceptance of objectives-based procedures of accountability, such as Management by Objectives. In Britain, the work of Hirst and Peters, in particular, and in America that of Bloom and his co-workers, may be seen as important in legitimising an objectives movement in education, and in curriculum development. This movement had its beginning with the work of Taba (1962), in particular. That is, curriculum planning was to proceed on the basis that the educational purposes of the curriculum would be translated, initially, into sets of objectives.

Kelly (1982) lists four main arguments for the acceptance of the objectives approach to curriculum planning. The most persuasive arguments are logical, educational, politico-economic and scientific arguments. For any activity to be considered rational (logical), it is argued that its goals and purposes must be clearly formulable. Hence, to educate "rationally" requires the clear formulation of

purposes, and their subsequent translation into objectives. This formulation will assist the evaluation of achievement. Evaluation will be necessary as a basis for public accountability. Thus public accountability is supported by the "rationality" of the objectives approach to curriculum planning.

The development of the notion of rational planning was accompanied by an upsurge in technological development, particularly as this related to space technology. A consequent re-emphasis on the priorities given to the natural sciences in curricula meant that many of the most comprehensive and objectives-based curriculum developments occurred in physics, chemistry, biology and the earth sciences. Hence, the objectives movement acquired a "scientific" orientation as measurable, observable and replicable objectives were favoured as, for example, for behavioural objectives.

Because of the apparent high status of science within society, arguments supporting the objectives approach in terms of its perceived scientific validity appear to carry considerable weight. This may reflect a general assumption that the "scientific" practice of anything is desirable. Associated notions of precision, accuracy, objectivity and rationality support this assumption. However, this approach implicitly contradicts its claim to be value-neutral by unquestioningly applying what are believed to be scientific values to the practice of education.

In the first instance, an objective may be thought of as constituting an action, thought or feeling. Consider the objective "To compute accurately". This objective specifies the object or purpose "to compute accurately". The object of the action to be taken is

to compute accurately. This is what is to be understood by the objective "to compute accurately". Similarly, objects of thought or feeling may constitute an objective. Thus, by specifying objects of action, thought or feeling, objectives express purposes or intentions. The objectives approach to curriculum development depends upon educational purposes being expressed as objects of action, thought or feeling, that is, as objectives.

This approach has, however, sometimes been associated with objectivism, that is with a tendency to lay stress on what is objective, or external to the mind, and hence on objective knowledge. This stress on knowledge, which is given and non-human, may lead to a view that educating is the process of transmitting selections of given knowledge to the student with as little distortion as possible. "Educated" students are those who can demonstrate that they have received this knowledge in its given form, and in particular, have come to know what is "objectively" true.

Rorty (1980) argues against the notion of objective knowledge. One of his important questions is "What is truth?" His belief is that there are two types of answers. The first implies that truth is external, to be searched for and found, whilst the second implies that truth is relative and constructed by humans. He argues that the former conception of truth is the result of the human task being mistakenly formulated as that of representing some world of "given" regularities, mirroring it as it "really" is, undistorted by any subjective shaping, particularly, such as through the use of value-laden language. The ultimate escape from such shaping is the use of mathematical symbols, for the special character of

mathematical truths appears to be that they cannot be misjudged or mis-reported. The truth, in this case, is imposed by the objects known. It is a necessary truth. It is this sense of unarguable certainty in mathematical truths which, ever since Plato's epistemology, has been used to divide truth into that which is unquestionable and "objective" truth, and that which is "made by humans, subjective and non-scientific and, therefore, "less true" in some way.

However, for Rorty (1980), there are no given regularities, and truth does not result from a clearer representation, or a more faithful mirroring, of something outside the self, but is something we make ourselves. All truths are a matter of victory in argument, and never final or "necessary". Our only rational certainty comes from conversation between persons, rather than through interaction within a non-human reality. The type of scientific certainty in question is not only impossible, but also undesirable in that it would lead to closure and the end of all inquiry. Borrowing Oakshott's phrase, Rorty suggests that it is the "conversation of mankind", which forms the "ultimate context within which knowledge is to be understood" (1980: 389).

By way of contrast, for Popper (1968) the growth of knowledge progresses through problem solving. Objective reality is defined as World 3, a world of "objective structures which are products, not necessarily intentional, of minds or living creatures, but which, once produced, exist independently of them" (Magee, 1973: 60). Even mathematical theories are still objective in this sense only, being firstly created by human beings, but then becoming autonomous in Popper's World 3. For Popper all knowledge, all

present truth, is the result of subjecting our speculations to initial discussion, and hence the continual interaction between World 3 and World 2, the subjective mind. Learning takes place, not through any discovery by observation of some thing non-human in the physical world of material things, World 1, but through the interaction of the other two worlds, through intrusion of the past and present theories which make up World 3, those developed by humans as they put their expectations to the test of experience and criticism, and which are therefore not objective in any sense of being beyond human control, fixed and unchangeable.

If, so Rorty and Popper suggest, truth is something we construct through human action based on language, then language becomes a tool, which is autonomous in World 3, but does not shape our knowledge or distort "reality". The development of self-consciousness and knowledge depends on a wider grasp of the world, an ability to "connect" temporally, spatially and causally as past, present and future form a continuum in which the present is seen to grow from the past, and the regularities observed in the past are the basis of our expectations and inferences about the probable shape of the future.

Thus attempts to justify, educationally, the objectives approach to curriculum development, and the association of this approach with the notion of objectivism, lead to the consideration of a range of philosophical issues. As before, each of these issues may be stated in terms of a range of pairs of dichotomous statements. These pairs of statements will include, for example, the following:

All knowledge is relative./ All knowledge is absolute.  
Truth is external./ Truth is relative to and  
constructed by humans.

Truth mirrors the regularities of experience./ Truth is  
something we make ourselves.

Truth is a matter of victory in argument./ Truth is  
imposed by the object known.

## C2: Curriculum development and student abilities

As general dissatisfaction with the objectives  
approach to curriculum development grew, particularly  
as a result of its apparent inappropriateness for the  
more expressive areas of the curriculum, process  
approaches, which focused on the experiences of  
learning rather than the outcomes of learning, became  
favoured.

This movement towards an emphasis on the process  
of educating would appear to have given renewed  
currency to the idea of a general education developing  
general powers of the mind, and of abilities or skills  
not being confined to particular areas of knowledge or  
subjects. A central question to any debate on the  
nature of liberal education is whether or not there are  
general abilities or powers of the mind. A classical  
discussion of this question is contained in John  
Locke's An Essay Concerning Human Understanding  
(London: J.M. Dent and Sons Ltd., new edition,  
abridged, 1976) and which is edited by John W. Yolten.

The focus of Locke's argument is that all of our  
ideas have but two sources - sensation and reflection.  
Sensations give us ideas of external objects and their

properties. Reflection gives us ideas of our own mental faculties.

The better to conceive the ideas we receive from sensation, it may not be amiss for us to consider them in reference to the different ways whereby they make their approaches to our minds and make themselves perceivable to us.

First, then, there are some which came into our minds by one sense only.

Secondly, there are others that convey themselves into the mind by more senses than one.

Thirdly, others that are had from reflection only.

Fourthly, there are some that make themselves way and are suggested to the mind by all the ways of sensation and reflection.

(Yolten, 1976: 47)

Furthermore,

The two great principal actions of the mind, which are most frequently considered, and which are so frequent that everyone that pleases may take notice of them in himself, are these two:

Perception, or Thinking;  
or  
Volition or Willing.

The power of thinking is called the understanding and the power of volition is called the will, and these two powers of abilities in the mind are denominated faculties. Of some of the modes of these simple ideas of reflection, such as remembrance, discerning, reasoning, judging, knowledge, fault, etc., I shall occasion to speak hereafter.

(Yolten, 1976: 52)

Thus these powers or abilities require sensations for their functions, but are original in the mind and may be developed through exercise.

But the question may not be concerned with the originality of the general powers of the mind as developed by exercise of the mind. Rather, it may be asked whether or not general powers of the mind can be the outcome of learning. In this case, it could be argued that something would have to be pre-supposed as being original.

Children must bring something into the world but it need not be general powers of the kind that cut across whole ranges of curricula subjects.

(Dearden, 1980: 280)

The resurgence of the popularity of a "general abilities" (competences, capabilities, and so on) approach to curriculum planning may be due to the proliferation of knowledge, and the possibility of some knowledge becoming obsolescent, and hence the need to ensure that students learn something of more lasting value. The development of general abilities, or general powers of the mind, is seen as offering the possibility of a curriculum outcome of lasting value. This is not a new notion. Newman (1853), in discussing the future development of university education, supported a general powers of the mind thesis. The

... aim was cultivate a faculty of entering with comparative ease into any subject of thought, and of taking up with aptitude any avenue or profession.

(Newman, 1853: preface)

Support for this view is provided by Wegener (1978), who sees liberal education as the cultivation of

certain critical powers of reflection which can then be employed in many different specific directions.

(Wegener, 1978: 27)



Similar arguments have been used, as for Dewey (1916), to support the development of particular general powers through the study of particular subjects. The special task of the study of English literature may be seen as the development of creative imagination, history to develop practical wisdom, and philosophy to develop logical thought. Whilst the development of these or, indeed, any other general abilities or powers of mind may be desirable, the question remains as to whether or not it is even logically, let alone practically, possible.

Attempts may be made to define liberal education in terms of the development of general mental abilities, which are agreed to be educationally desirable. However, the acquisition and/or development of any such abilities can only become apparent through associated publicly describable and testable achievements. Such abilities are therefore specified only in public terms and criteria, and such a specification is dependent upon the public features of the knowledge concerned. If mathematical knowledge is describable in public terms, then those activities assumed to indicate the exercise of a mathematical ability may be described and assessed publicly. Hence, if such public specification is necessary to the indication of mental abilities, then no such specification can occur without a full account of the public features of the related areas of knowledge. For Hirst, therefore, any ability must be exercised on something specific, and judged according to those specific standards of success inherent within, and characteristic of, the Forms of Knowledge. Abilities are Form - specific, rather than general.

Griffiths in Archambault (1965) argues that mentalistic concepts such as "intelligence" and "imagination" must be given public expression in terms of a particular activity. Thus the force of the word intelligent will depend, entirely, on what it actually qualifies. An intelligent mathematician is different, therefore, from an intelligent historian. Such arguments, however, seem to show that specific abilities are necessary, but not that general abilities are impossible.

The key question raised in this section is whether or not student abilities, or powers of the mind, are general or specific. If they are general, they do not require the study of any particular body or form of knowledge, or the completion of specific tasks. If, however, abilities, or powers of the mind, are specific, they can only be developed through the study of particular bodies or forms of knowledge, or by the completion of certain tasks.

The key issues raised in this section can be dichotomously expressed in the following pair of statements:  
 Student abilities, or powers of the mind, are specific./ Student abilities, or powers of the mind, are general.

### 3.2 (iv) Module D: Contrasting perspectives of learning and teaching

In Module A, Kathryn Morgan (1975), in discussing socialization, social models, and the open education movement, proposes that there are two dominant structuring models, the one relating to public schools and the other subjective, and more holistic in tone, since all dimensions of the student's subjectivity are

regarded as worthy of concern in the educational setting (1975: 127, 128).

The set of philosophical issues raised within modules B and C of these readings are also contained within Morgan's epistemological and psychometric models of the learner. That is, these models summarise the philosophical issues identified in Modules B and C in a form which directly relates them to learning and teaching. Both the philosophical issues identified, and their implications for teaching and learning, are encapsulated within the contrasts which can be drawn between the characteristics of these models. These contrasts may be categorised as follows:

Perspective A

(i) Learning is:

initiation,  
intellectually passive,  
receiving,  
public,  
increasingly abstract,  
governed by objective,  
properties,

Perspective B

Learning is:

Creating,  
intellectually active,  
constructing,  
personal,  
increasingly personally,  
governed by subjective,  
qualities,

(ii) Development is according to: Development is according to:

external principles and  
criteria

external principles and  
criteria

(iii) Achievement is assessed

according to:

Growing congruence,  
public standards,  
pre-existing standards,  
objective standards,

according to:

growing individuality  
personal standards  
continually revised  
standards  
subjective standards

(iv) Knowledge is:

public,  
objective,  
pre-existing

(v) Teaching is:  
didactic.

Understanding is:

personal  
subjective,  
continuously being created.

Teaching is:  
interaction-oriented.

These perspectives suggest some bi-polar statements, or dichotomies, which may be used in interpreting descriptions of effective teaching and learning, and which arise from the preceding readings.

CHAPTER FOUR  
CONDUCTING THE TEACHER DEVELOPMENT PROGRAMME

4.1 Introduction

- (i) Schedule for the teacher development programme;
- (ii) Enrolments in the teacher development programme;
- (iii) Background information of enrollees;
- (iv) Selecting a focus class;

4.2 Conducting the programme:

- (i) - (xiv) : Presentation of the programme  
for days 1 to 14.

(xv) : Student evaluation of the  
programme.

(xvi) : Conclusion

(i) Schedule for the teacher development programme

This programme was conducted as the course Curriculum Management and Delivery. This course was one of the courses of the Senior Staff Development programme for senior teachers of the Education Department of Tasmania, Australia.

It was conducted in three periods, each of one week (5 days) duration. These periods were:

June 9-13, 1986

July 26 - August 1, 1986

October 6-10, 1986

During each of the five teaching days of each week the programme was conducted for the following periods:

9.00 a.m. - 11.00 a.m.

11.15 a.m. - 1.00 p.m.

2.00 p.m. - 4.15 p.m.

The programme therefore ran for six hours per day.

(ii) Enrolments in the teacher development programme

Sixteen (16) senior teachers enrolled in, and completed, the programme. The programme catered for students enrolled in either Bachelor of Education or Master of Educational Studies degree programmes as offered by the Centre for Education of the University of Tasmania. The names and addresses of participants are given as Appendix A to this study.

(iii) Background information on enrollees

To obtain background information on the participants, each programme member completed a questionnaire giving name and addresses, and details of their

(a) initial teacher training;	
(b) experience as a teacher;	
(c) academic and professional qualifications;	
(d) current studies, and	
(e) professional responsibilities.	

This questionnaire is included as Appendix B of this study.

(IV) Selecting a focus class

To help focus the study on teaching and learning within an actual class, each class member was asked, prior to the commencement of the teacher development programme, to select a focus class. (The letter making this request is given in Appendix E). This class was preferably a class, or group of students, the teacher was currently teaching, and was likely to continue to teach for the remainder of the year during which the teacher development programme was being conducted.

Having selected this focus class, each teacher was asked to describe teaching approaches taken to ensure that effective learning takes place in this class. These approaches were to refer to the total teaching programme for the class for the year, and not to any specific part of the teaching programme. In describing these approaches the teachers were asked to consider questions such as:

What are the priorities to be considered when planning to teach this class?

What are the conditions under which students can learn most effectively?

What are the main difficulties, if any, in teaching this class?

What are the characteristics of the students which markedly effect the ways the class is taught?

What are the best teaching strategies for motivating the class?

What parts of the programme do you teach most effectively and why?

What parts of the programme do the students learn most easily and why?

The purpose of asking these questions was to provide a basis for each teacher describing effective teaching and learning for their focus class.

Each member had this information available at the commencement of the programme.

(v) Compiling a professional journal

Assessment of the work of the participants in the teacher development programme was based upon the content of their Professional Journal.

The following instructions for completing the Professional Journal were given:

As well as the material suggested in the description of the Professional Journal for inclusion in the Journal, each member will be expected to include all working papers and other written materials developed and used during the conduct of the programme. In particular, all papers used in repertory grids related to effective teaching and learning must be included. These should include reflective evaluations by each teacher on the work they have completed at the end of the various stages of the programme. Opportunities to complete such evaluations will be given during the programme. During this programme a range of readings will be studied. Two approaches to this study will be suggested. The first involves direct attempts to apply repertory grid techniques to the reading, whilst the second uses a "key question" approach. Whichever approach is used to study a particular reading, it is expected that the results of this study will be included in the Professional Journal.



#### 4.2 Conducting the programme (P1)

As described in section 2.4 (ii)(a) of this study, the presentation of this programme will be based on the following ordered set of phases:

- Describing
- Recognizing
- Exploring
- Sharing
- Negotiating
- Reviewing and revising

These phases will be used as a basis for organising and presenting the teacher development programme.

The conduct of each day of the programme will now be described, in detail.

##### (i) Day 1 (June 10)

##### Describing, recognizing and exploring

Each class member came to the class with a set of statements describing effective teaching and learning, as perceived by them, for their focus class.

These preliminary descriptions were then made the focus of discussion with the programme participants. For each of the questions listed in the above request (see appendix E), class discussion was used to discuss particular features of effective teaching and learning, which could be considered in formulating answers to these questions. In this way, a list of possible answers was developed with the whole class. Each class member was asked to consider their preliminary description of effective teaching and learning for their focus class, and, in the light

of the above discussions, add to, delete, or modify this description as they considered appropriate.

(To depersonalize this task, class members were asked to think in terms of developing a description of effective teaching and learning for a beginning teacher, who had been asked to take over their focus class in the near future.)

Sharing, negotiating, reviewing and revising

The class was then asked to consider the nature of the grouping, which would enhance the sharing of these descriptions of effective teaching and learning. In particular, the class was asked to decide whether or not groupings should be mixed in terms of the teaching backgrounds of the group members such as in infant, primary, secondary and further education, or specialized in that all members with a secondary education background, for example, should be placed in one group. The class unanimously chose the former procedure, emphasising the need to widen perspectives of effective teaching and learning. The groups were then formed on this basis. The group memberships are given in Appendix F of this study.

Then, each class member shared their preliminary descriptions of effective teaching and learning for their focus class with other members of the group. At this stage, no attempt was made to negotiate any agreed description of effective teaching and learning. As a result of this sharing, each class member had the opportunity to review and revise their description.

These descriptions were shared with the whole class. During this sharing, emphasis was given to having each participant state their descriptions as a series of grammatically simple sentences, with, where possible, each sentence dealing with only one feature of effective teaching and learning. Descriptions were then reviewed and revised to meet that requirement.

#### Eliciting bi-polar statements

Using examples of the descriptive statements used by class members, the expression of these in terms of the bi-polar statements perceived to be implied by them, was demonstrated. Thus, for example, the descriptive statement supplied by one participant was:

Effective teaching and learning involves the development of self-motivation by providing enjoyable, interesting and purposeful activities.

The student then perceived this statement as implying two possible alternative descriptions. These were:

- A. Effective teaching and learning results from the self-motivation of the students.
- B. Effective teaching and learning requires the extrinsic motivation of students.

These statements are referred to as bi-polar statements or dichotomies.

In eliciting such bi-polar statements, the class members were encouraged to consider bi-polarity in terms of alternative educational

perspectives as perceived by them within the current discourse on educational issues.

To familiarise students with the procedure, a range of examples of descriptive statements was taken, and the eliciting of bi-polar statements demonstrated. Then, each class member was asked to use the descriptive statements prepared for their focus class to generate a range of bi-polar statements.

#### Negotiating

Working in the same groups, each group shared the initial bi-polar statements of its members. A specific set of statements was then negotiated within each group.

#### (ii) Day 2 (June 11)

The sets of bi-polar statements developed above were used as a basis for the second day of the programme.

Each class member was asked to consider the description of effective teaching and learning for their focus class developed during the first day of the programme. These descriptive statements, and their implied assumptions in relating to teaching and learning, were then considered by the class members. This set of statements formed the elements for the field of inquiry, or problem, being considered, namely describing effective teaching and learning.

These sets of statements were shared with other members of the group, using the same group membership as before. Individual members were

then given the opportunity to review and revise their statements. At this stage, no attempt was made to negotiate a common set of statements, either within groups, or with the whole class. This was done to try to ensure that the statements were clear for the individuals concerned as this was considered vital to the next stage of the presentation of the programme.

The statements so obtained were to be used as the elements of a repertory grid, the field of enquiry, or problem, for which was the description of effective teaching and learning.

#### Introduction to Repertory Grid Techniques

Kelly's (1955) Personal Construct Theory, its eleven corollaries, and their implications for teaching and learning, were discussed with the class. This discussion was based on the more detailed consideration of these implications given in chapter 2, sections 2.2 and 2.3, of this study.

The development and analysis of a repertory grid was discussed with the class, using as a basis for this discussion the Handbook for the Development and Analysis of Repertory Grids contained in Appendix G of this study. In particular, attention was paid to:

- (i) The notions of elements and constructs, and their distinction;
- (ii) The rehearsal of a preliminary exercise in developing and analysing a repertory grid;
- (iii) The procedures to be used for eliciting constructs;

- (iv) The procedures, which can be used to develop a topic, or field of inquiry, with a group of teachers;
- (v) The notions of the initial and emergent poles of a construct;
- (vi) Correlation procedures for both elements and constructs;
- (vii) Focusing the grid;
- (viii) Interpreting the grid.

The following is an example of the development and analysis of a repertory grid on descriptions of effective teaching and learning completed by one of the participants in the course.

Example 1 : Repertory Grid: Descriptive statements (elements)

*Element*

- A Children learn most effectively when their individual needs are recognised.
- B Effective learning involves self-motivation.
- C Effective learning involves interaction between the teacher and the learner.
- D Children need to feel a sense of individual worth.
- E Effective learning involves practical experiences.
- F The learner should have a sense of purpose and direction.
- G The learning program should consider the whole child.
- H Children learn at different rates.
- I Active participation by the learner is necessary for effective learning.
- J Learners should evaluate their own learning needs.

Example 1: Repertory grid for descriptions of effective teaching and learning: Initial bi-polar statements (constructs)

Construct	Initial Pole	Emergent Pole
1.	Effective learning involves interaction between the teacher and the learner.	Effective learning involves the learners' own initiatives.
2.	Effective learning depends on the individual learner's attitudes.	Effective learning depends on the attitudes that develop from the relationship between teacher and learner.
3.	Effective learning is learner-centred.	Effective learning requires teacher input.
4.	Effective learning focuses on individual needs.	Effective learning focuses on the needs of the curriculum.
5.	Effective learning is based on practical experiences.	Effective learning precedes practical experiences.
6.	Effective learning needs to be purposeful for the learner.	Effective learning needs to be purposeful for the teacher.
7.	Children learn at different rates.	Children learn at the same rate.

8.      *Effective learning involves self-evaluation by the learner.*      *Effective learning involves external evaluation of the learner.*
9.      *Effective learning focuses on the whole child.*      *Effective learning focuses on specific developmental areas of the child.*
10.     *The learner should be actively involved in the learning process.*      *The learner should learn from a teacher model.*
11.     *Effective learning involves learner evaluation of learning performances and application to new situations.*      *Effective learning involves learning behaviours established by the teacher.*



Example 1:

REPERTORY GRID FOR DESCRIPTIONS OF EFFECTIVE TEACHING AND LEARNING

Elements (Statements)

Construct	A	B	C	D	E	F	G	H	I	J	Construct
1. Effective learning involves interaction between the learners' attitudes	✓	X	✓	✓	✓	X	✓	✓	X	X	Effective learning involves the learners own initiatives
2. Effective learning depends on the individual learners' attitudes	X	✓	X	X	✓	✓	X	X	✓	✓	Effective learning depends on the attitudes that develop from the relationship between teacher and learner
3. Effective learning is learner centred	X	✓	X	X	✓	✓	X	✓	✓	✓	Effective learning requires teacher input
4. Effective learning focuses on individual needs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Effective learning focuses on the needs of the curriculum
5. Effective learning is based on practical	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Effective learning precedes practical experiences
6. Effective learning needs to be purposeful for the learner	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Effective learning needs to be purposeful for the teacher
7. Children learn at different rates	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Children learn at the same rate
8. Effective learning involves self evaluation by the learner	X	X	✓	✓	X	X	✓	✓	✓	✓	Effective learning involves external evaluation of the learner
9. Effective learning focuses on the whole child	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Effective learning focuses on specific developmental areas of the child
10. The learner should be actively involved in	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	The learner should learn from a teacher model

Example 1 : Correlation matrices for a repertory gridCorrelation matrix for elements

Elements	A	B	C	D	E	F	G	H	I	J
A		6	10	9	7	6	7	8	6	6
B			6	7	9	10	6	7	10	10
C				9	7	6	10	9	6	6
D					8	7	9	8	7	7
E						9	7	8	9	9
F							6	7	10	10
G								9	6	6
H									7	7
I										10

Correlation matrix for constructs

Constructs	1	2	3	4	5	6	7	8	9	10
1		1	2	6	6	6	6	2	6	6
2			9	5	5	5	5	9	5	5
3				6	6	6	6	8	6	6
4					10	10	10	6	10	10
5						10	10	6	10	10
6							10	6	10	10
7								6	10	10
8									6	6
9										10
10										

Interpretation of the repertory grid

The student gave the following interpretation of this grid:

Example 1: Interpretation of a repertory gridINITIAL ELEMENTSLow CorrelationsElements A & B

The teachers perceived needs of the individual may not be seen by the individuals as being in their own best interest.

Elements B & C

The teacher-learner interaction does not always help to motivate the child. Does this mean that children would prefer a more structured, teacher-directed situation? This applies to my focus class, where their self-esteem is very low, and in order to motivate the group strong teacher input is necessary.

Elements A & F

This confirms the above, since recognition of needs did not correlate highly with the learner's sense of purpose. It also indicates a need to focus on self-esteem itself as an area of learning.

Elements B & G

If we are focusing on the whole child, we are focusing on his strengths and weaknesses. If we are asking children to focus on weaknesses, then it is a delicate issue for them to accept the weakness and become motivated to resolving it.

Elements C, I & J

The interaction places as much emphasis on the role of the teacher as it does on the role of the learner. I have a philosophy of the teacher as a facilitator of learning. With my focus class I provide more direction than I may in a different class. This is true of my teaching style. This is supported by low correlation between G and I, J.

High Correlations

My argument to date is countered by these correlations. Perhaps this highlights a conflict between my teaching philosophy and my teaching style.

It also indicates the fundamental importance of teacher-pupil relationships, and the difficulties the teacher has in meeting the needs of the individual as perceived by the individual, and as perceived by the teacher.

Low Correlations - Bi-polar statements (constructs)  
Constructs 1 & 2

The low correlation can be explained by the way the poles were recorded. If construct 2's poles were reversed, then there would have been high correlation. Constructs 1 and 2 are similar and could have been combined.

Constructs 1 & 3

The low correlation reinforces the statements re teacher-learner input.

Constructs 1 & 8

The low correlation does not fit with my focus class where personal and immediate feedback is important. However, if we look at the two poles that do correlate we see that there is a high correlation between learner-initiative and self evaluation.

Constructs 2 & 5

Correlation occurs on the basis that learner's attitudes are related to learning based on practical experience, not on theory.

Constructs 2 & 6

Learner attitudes relate to recognition of learner needs, not curriculum needs.

Constructs 2 & 7

Learner attitudes relate to learning at different rates.

Constructs 4 & 8

Learning involves the learner being able to evaluate his own needs.

Constructs 5 & 8

Learners can best evaluate themselves through practical experiences.

Constructs 7 & 8

Learners need to judge the pace at which they can learn. They need to recognise their readiness for new learning situations.

Constructs 3 & 5

Learner-centered approach is best achieved by focusing on practical experiences.

Constructs 3 & 6

To be purposeful learning needs to be learner-centered.

Constructs 3 & 9

Learner-centered means focusing on the whole child.

High Correlations

Constructs 4,5,6,7,9,10 are integral parts of the educational philosophy as outlined in the C.O.P.E. report. For primary teachers these are fundamental to the learning process. As a result this only confirms my view of teaching. More value may have been gained by making the constructs less bi-polar. This is necessary to enable a more critical look at the widely accepted beliefs outlines above.

(iii) Day 3 (June 12)Repertory Grid of descriptions of effective teaching and learning

For each student, the set of statements describing effective and learning, as entered on Form 1 (appendix C), was then used as the elements of a repertory grid. In this case, the field of inquiry is the description of effective teaching and learning, and this field is represented by the set of descriptive statements, or elements, which relate to the class members' focus class.

Bi-polar statements (constructs) were then elicited from these elements using the triad method as described in the Handbook on Repertory Grid Techniques (See Appendix G), and in chapter 2, section 2.3 of this study. Each of the poles of these statements was stated as a single, grammatically-simple sentence. This set of bi-polar statements was then entered, for each class member, on Form 2 (appendix C).

The following is an example of the elicitation of bi-polar statements using the triad method. The three selected elements are:

- A. Children learn most effectively when their individual needs are recognised.
- B. Effective learning involves self-motivation.
- C. Effective learning involves interaction between the teacher and the learner.

The first question to be asked, when using the triad method to elicit constructs, is:

Which two of the triad are similar in their implications for effective teaching and learning?

Having selected a pair of similar elements, say A and B, it must then be asked in what way are they similar? In this case, both elements link learning to the individual. This similarity may then be stated as:

Effective learning is individually-based

This is the initial pole of the bi-polar statement or construct.

The second question to be asked is:

In what way(s) are the pair A and B different from C?

In this case, A and B stress the primary role of the individual in learning, whilst C stresses the importance of interaction. As the difference is this emphasis on interaction, the emergent pole may be stated as

Effective learning is based on the interaction between the teacher and learner

The bi-polar statements (or construct) elicited are therefore:

Effective learning is individually-based/Effective learning is based on the interaction between teacher and learner.

In this way, each class member elicited an initial set of bi-polar statements, or constructs. These were then shared with groups, using the same group membership as before. The aim of this sharing was to enable each student to add to, delete, or modify their initial set of bi-polar statements.

The revised sets of bi-polar statements were shared with the whole class to allow individual members to review and revise their particular set of bi-polar statements. Each group was then asked

to share and negotiate an agreed set of bi-polar statements relating to descriptions of effective teaching and learning. These negotiated bi-polar statements were then entered in Form 3 (appendix C).

(iv) Day 4 (June 13)

Analysis and interpretation of the repertory grid

Each class member entered the elements and bi-polar statements on Form 4 (appendix C) as a Repertory Grid.

Using the procedures outlined in the Handbook on Repertory Grid Techniques, pages 11-13, as in Appendix G, and as discussed in chapter 2, section 2,3, each class member completed a correlation analysis for both elements and bi-polar statements. These were entered on Form 5 (appendix C).

On the basis of these analyses, each student attempted to focus their repertory grid by re-writing both the elements and bi-polar statements of higher correlation adjacent to one another in the grid. This was done according to procedures given on pages 14, 15 of the Handbook of Repertory Grid Techniques (Appendix G). In most cases, it was not necessary to do this manually, as described in the Handbook. The focusing could be done through the inspection of closely related elements and bi-polar statements.

The element and bi-polar statement correlations were then considered by each class member for their particular repertory grid. These correlations were then interpreted by the student

as they related to the focus class chosen by the student. Each class member then stated their interpretation of their grid on Form 6 (appendix C).

These interpretations were then shared within the class groups, and an opportunity given to review and revise the interpretations of the individual grids.

At this stage, no further sharing or negotiation of interpretation was attempted.

#### Suggested approach to reading

To build on the approach to describing effective teaching and learning, already developed, the following approach to reading relevant articles and texts was developed and discussed with the class. This approach, given in appendix D, was stated in the following terms:

#### A suggested guide to reading

*The emphasis of this course is on the descriptions of effective teaching and learning used by teachers. The readings given for the course should, as well as proposing and arguing a range of view points concerning curriculum planning and development, provide a range of alternative descriptions through which effective teaching and learning can be described. Two approaches to reading are suggested. The first is based on procedures for developing repertory grids, whilst the second uses sets of key questions relating to educating, teaching and learning.*

#### The Repertory Grid Approach

*The use of repertory grids to analyse and interpret a particular reading depends upon both elements and constructs (in this case bi-polar statements) being elicited from the field of inquiry, that is from the article.*



Analysis and interpretation of possible relationships between the elements and bi-polar statements, elicited from these elements, may be undertaken using repertory grid techniques.

For each reading it will be necessary to elicit, initially, a set of elements, which are representative of the full range of arguments advanced in that reading. That is, a set of statements (elements) giving a coherent and complete summary of the central arguments of the reading must be made.

To develop this summary, it may help to begin by considering the structure of the reading. If, for example, it is presented in clearly differentiated sections, it may be advisable to summarize, separately, each section. These summaries may be consolidated to give a full summary of the article. If it is not sectionalized, it may be helpful to consider, separately, each paragraph. In this case, the integration of the essential arguments of each paragraph will lead to a final summary. These procedures should enable a coherent and succinct summary of the article to be written.

This summary may be used for eliciting the elements for a repertory grid. For this purpose, the summary must be written as a connected series of grammatically-simple sentences. For the purposes of later analysis, it is preferable that not more than 10 sentences be used. When formed, these sentences should be modified, if necessary, to avoid overlap and inconsistency. The final set of sentences will be the elements representing the article being studied.

The elements should be listed, and a triad method used to elicit constructs as bi-polar statements. Such bi-polar statements will reflect the alternative descriptions being used by the author in relation to the particular issues being addressed in the reading. A sufficient set of bi-polar statements should be elicited to adequately represent the educational issues being raised in the reading.

The set of elements and bi-polar constructs form a repertory grid. Correlation analyses of both elements and bi-polar statements may now be completed. These will indicate possible relationships within both the set of elements, and

the set of bi-polar statements. In this way, a focused grid may be produced.

The focused grid may be used as a basis for interpreting the reading being studied. It will assist in considering the alternative descriptions of issues being used, and the assumptions that appear to underlie these alternative descriptions, and the possible consequences of describing the issues in these ways. In examining a particular reading in this way, the emphasis is on the descriptions of effective teaching and learning implied by the reading, and the consequences of alternative descriptions for curriculum planning and development.

#### The Key Questions Approach

A second approach is to consider the reading using a set of key questions. In this case, each class member proposes a set of general questions relating to effective teaching and learning. These may be shared with other class members and an agreed set of key questions negotiated. Such a set may include, for example, questions relating to:

- (i) the conditions for effective learning;
- (ii) the motivating of students;
- (iii) the conditions for effective teaching;
- (iv) the purposes of educating;
- (v) the types, and nature, of knowledge that the students should acquire;
- (vi) the organisation of the curriculum;
- (vii) the teaching resources available;
- (viii) the social expectations for the students;
- (ix) the key principles and concepts used in discussing teaching and learning.

By considering these questions in relation to a particular article, additional questions will be generated. The range of possible answers obtained by applying these questions to a particular reading may be used to examine alternative descriptions of effective teaching and learning.

#### Summary

Whichever approach is used, the emphasis should be on gaining further insights into the descriptions used for effective teaching and learning.

Each of the above approaches was discussed with the class. The approaches were then demonstrated

using the reading "Curriculum Development and Student-centredness" as given in Chapter 3 of this study. The class was then asked to apply these approaches to following readings:

Reid, L.A. (1981) "Knowledge, Knowing and Becoming Educated" in Journal of Curriculum Studies, V13, N2, pp 78-82.

Hirst, P.H. (1974) "Liberal Education and the Nature of knowledge" in Knowledge and the Curriculum London: Routledge and Kegan Paul, pp 30-33.

(v) Week 2, Day 1 (July 28)

At the commencement of this second week of the programme the following outline of the teaching programme for the week was given:

During this week the programme will focus on approaches to curriculum development by considering the notion of liberal education. The examination of the notion of liberal education will lead to the identification of some philosophical issues as being critical to the discussion of the educational justification of liberal education. The implications of each of these issues for effective teaching and learning, and particularly for alternative descriptions of affective teaching and learning, will be considered.

Course Content

The content of the course for this week will be presented under the following headings:

- (i) Curricula and liberal education;
- (ii) Hirst's Forms of Knowledge;
- (iii) Intellectual development and the Forms of Knowledge;
- (iv) Objectivity, truth and inter-subjective agreement;
- (v) Procedural and propositional knowledge;
- (vi) Polanyi, objectivism and tacit integration.

For each of these headings, a prepared reading will be made available. Each reading will conclude with the statement of key

questions raised in the reading, and a set of bi-polar statements, which attempt to summarise some of the important philosophical issues raised by these questions.

For each reading:

- (i) Each class member is asked to identify the key educational issues or questions it raises, particularly as these relate to effective teaching and learning;
- (ii) Share these questions or issues within the smaller groups, which will be formed later, and negotiate an agreed list of questions or issues for the group;
- (iii) The sets of group questions will be shared with the whole class, and, if possible, a consolidated list of questions or issues negotiated;
- (iv) Each class member will be asked to consider the bi-polar statements implied by each of the questions or issues, using the triad method, either in the group set of negotiated issues or questions or, if it has been achieved, the class set of issues or questions;
- (v) In either case, the sets of bi-polar statements will be shared with the group, and a negotiated set of statements developed;
- (vi) The implications of each pair of bi-polar statements for describing effective teaching and learning are considered by the group;
- (vii) The bi-polar statements are to be re-written within the groups as alternative descriptions of effective teaching and learning;
- (viii) Each class member is asked to review and revise the bi-polar statements with a view to describing effective teaching and learning for their focus class;
- (ix) This set of bi-polar statements, and the final set of issues or questions for the reading, will be recorded by each student.

After all readings have been completed:

- (xi) Each group will be asked to produce a consolidated list of questions or issues, and bi-polar statements, for the total set of readings considered during the week;

At the end of this week of the course

- (xii) Each class member will restate their descriptions of effective teaching and learning as these apply to their focus class;
- (xiii) Use this restatement to produce a set of elements describing effective teaching and learning;
- (xiv) Use a triad method to elicit bi-polar statements from these elements;
- (xv) Complete correlation matrices for both elements and bi-polar statements;
- (xvi) If necessary, focus this repertory grid;
- (xvii) Complete an analysis and interpretation of this grid in terms of describing effective teaching and learning;
- (xviii) Compare this interpretation with that obtained at the end of the first week of the course;

It should be noted that, in conducting the programme, in the manner outlined above, the teaching approach used during the first week of the course and described in Section 2.4 (1) of this study, has been retained. That is, the conduct of the programme is based upon the following phases:

- (i) Describing issues and questions;
- (ii) Recognizing these as key issues and questions to be addressed;

- (iii) Exploring alternative descriptions of these issues and questions;
- (iv) Sharing these alternative descriptions;
- (v) Negotiating an agreed set of descriptions;
- (vi) Reviewing and testing these descriptions, and, if necessary, revising them, in this case in relation to the focus class.

The class was introduced to Module A of the programme readings, as given in Section 3.2. This reading was discussed in detail with the class, and alternative descriptions of effective teaching and learning were explored. These alternative descriptions were stated as bi-polar statements.

During the remainder of this day, the class worked, according to the above plan, to complete the reading "Curricula and liberal education", chapter 3, Section 3.2 (ii) (B1) and commenced work on the reading "Hirst's Forms of Knowledge", chapter 3, section 3.2(ii) (B2). The elements and bi-polar statements for the readings completed above were developed.

(vi) Day 2 (July 29)

The above reading, together with the reading "Intellectual Development and the Forms of Knowledge", appendix H, was completed. The elements and bi-polar statements for the above reading were developed.

(vii) Day 3 (July 30)

The reading "Objectivity, truth and inter-subjective agreement", as given in appendix H, was completed according to the procedures given above.

The elements and bi-polar statements developed for the above reading were developed.

(viii) Day 4 (July 31)

The readings "Knowing how" and "knowing that", "Polanyi, objectivism and tacit integration appendix H, were considered. As time did not permit, the questions and issues raised by these readings in relation to describing effective teaching and learning were only discussed with the whole class group, and no attempt was made to have participants complete the formal procedures outlined above.

(ix) Day 5 (August 1)

During this day the tasks outlined above under the headings After all readings have been completed and At the end of this week of the course (p.194) were completed by groups and individual class members as required.

This completed the work for the second week of the course.

Programme Presentation : Week 3

During this week, readings given in module C of this study, relating to a range of approaches to curriculum development, were considered. The emphasis within these considerations was on describing effective teaching and learning. The approaches considered were:

- (i) Curriculum development and objectives  
(section 3.2(iii)(C1));
- (ii) Curriculum development and student abilities  
(section 3.2(iii)(C2));

- (iii)Curriculum development and student-centredness (appendix H);
- (iv) Curriculum development and educational processes (appendix H);
- (v) Curriculum development and conversation (appendix H);

Insufficient time was available to consider sections C6 and 3.2 C7 (appendix H).

For each of these readings:

- (i) Each student was asked to consider the reading and to state the key issues or questions raised by it. (These issues or questions are the elements which represent the reading);
- (ii) These questions were shared within the groups, and an agreed set of elements, describing effective teaching and learning, negotiated within the group;
- (iii)Each student used these elements to elicit a set of bi-polar statements;
- (iv) These bi-polar statements were shared within the group, and an agreed set of such statements negotiated;
- (v) Each student completed a repertory grid using these elements and bi-polar statements;
- (vi) Correlation matrices for both elements and constructs were completed, and where necessary the repertory grid was focused;
- (vii)The repertory grid was then analysed and interpreted in relation to effective teaching and learning for the focus class.

After the completion of each reading a short review session was held with the whole class.



In completing this procedure for each reading, it should be noted that the approach to conducting the programme as outlined above, was retained. That is, the phases of describing, recognizing, exploring, sharing, negotiating and reviewing and revising were all contained within the way the course was conducted for this week.

(x) Day 1 (October 6)

Following an outline of the programme for the week and the approach to be taken to presenting the programme, as outlined above, the first reading, "Curriculum development and objectives" was completed by all students.

(xi) Day 2 (October 7)

During this day, the reading "Curriculum development and student abilities" was completed, and the reading "Curriculum development and student-centredness" commenced.

(xii) Day 3 (October 8)

The reading on "Curriculum development and student-centredness" was completed.

(xiii) Day 4 (October 9)

The reading on "Curriculum development and conversation" was completed. Time did not permit consideration of the reading "Curriculum development and educational processes".

(xiv) Day 5 (October 10)

During this day, each student again developed, analysed, and interpreted a repertory grid on

describing effective teaching and learning as related to their focus class.

(xv) Student evaluation of the programme

Following the completion of this analysis and interpretation, each student was asked to write a detailed evaluative statement of the entire programme. In doing so, they were requested to reflect upon the purposes, as given in section C of the Introduction, of the programme and the extent to which these were, or were not, met by their participation in the course. In particular, each student was asked to comment on:

- (a) The strengths of the course in relation to achieving the stated objectives;
- (b) The weaknesses of the course;
- (c) Those aspects of the course which they considered to be of particular professional assistance, and the reasons for them being so;
- (d) Those elements of the course which did not give professional assistance;
- (e) The approach to conducting the course as a possible model for teacher development;
- (f) The notion of professional development assumed by the course and its conduct;
- (g) The use of repertory grids as a means of helping teachers describe effective teaching and learning;
- (h) The idea of a focus class as a basis for a course in teacher development;
- (i) The course readings supplied as a basis for the discussion of educational issues, and hence for teacher development;

- (j) The approach to assessing taken for the course;
- (k) The ways in which the course should be modified or changed for future classes.
- (l) What are the likely long-term effects of the programme?

(xvi) Conclusion

The materials produced during the programme by three of the participants, and, in particular, those repertory grids and their analyses and interpretations, which relate directly to describing effective teaching and learning, will be considered in the next Section of this study.

## SECTION II

### Conclusion

The reading content of chapter 3 was used in the conduct of the teacher development programme. The conduct of this programme has been described in chapter 4.

SECTION III: EVALUATION OF THE EFFECTIVENESS OF THE  
TEACHER DEVELOPMENT PROGRAMME

The purposes of the teacher development programme, as stated in Section C of the Introduction to this study, are:

- (i) Individual teacher purposes;
- (ii) Group purposes;
- (iii) General Purposes.

In chapter 5, the effectiveness of the programme in meeting individual and group purposes is evaluated. In chapter 6, the effectiveness of the programme in meeting its general purposes is evaluated.

The planning, conduct and reading programme for the teacher development programme are evaluated in chapter 7.

## CHAPTER FIVE

### EVALUATION OF THE EFFECTIVENESS OF THE TEACHER DEVELOPMENT PROGRAMME IN MEETING INDIVIDUAL AND GROUP PURPOSES

#### 5.1 Evaluation procedures.

#### 5.2 Evaluation questions.

#### 5.3 Responses to evaluation questions.

5.4 Evaluation of the effectiveness of the teacher development programme in meeting individual and group purposes:

- (i) Evaluation of the effectiveness of the teacher development programme in meeting individual and group purposes;
- (ii) Analysis of participant's comments;
- (iii) Interpretation of this analysis;
- (iv) Conclusions.

#### 5.1 EVALUATION PROCEDURES

At the end of the teacher development programme, each participant was asked to reflect upon their experience of the programme. In particular, they were asked to reflect upon the purposes of the course, and the extent to which these were met, or not met, by their participation in the programme. As the programme had been conducted with an emphasis on the development of each teacher, individual, rather than class or group, responses to the programme were sought. In keeping with the open-minded and intellectually critical stance of the course, the participants were asked to respond to a set of open questions giving their personal evaluations of the programme.

These questions are given in the following section of this chapter. The responses to these questions have been collated and summarised. These responses will be used to evaluate the effectiveness of the programme in meeting individual and group purposes.

In section 5.4, the responses to all questions (a) to (l), as given in section 5.3(a) to 5.3(l), have been used to evaluate the effectiveness of the teacher development programme in terms of its stated purposes for participants. This evaluation is reported under the following headings:

- (i) Relationship of participants' comments to programme purposes;
- (ii) Analysis of participants' comments;
- (iii) Interpretation of this analysis;
- (iv) Conclusions and recommendations.

## 5.2 EVALUATION QUESTIONS

Each participant was asked to comment on the following questions:

- (a) What were the strengths of the course in terms of achieving the stated objectives?
- (b) What were the weaknesses of the course?
- (c) Which aspects of the course do you consider to be of particular professional assistance, and why do you consider them to be so?
- (d) Which aspects of the course were not of professional assistance?
- (e) Is the approach taken to conducting this programme a possible model for teacher development and, if so, why, and, if not, why not?
- (f) What are your comments on the notion of professional development assumed by the programme and its conduct?

- (g) What are the advantages and disadvantages of the use of repertory grids in helping teachers describe effective teaching and learning?
- (h) What are the advantages and disadvantages of the use of a focus class as a basis for teacher development?
- (i) What were the strengths and weaknesses of the readings supplied for the programme in assisting with teacher development?
- (j) What are your views on the approach taken to participant assessment for the programme?
- (k) In what ways should the programme be modified for future classes?
- (l) What are the likely long-term effects of the programme?

### 5.3 RESPONSES TO EVALUATION QUESTIONS

- (a) The strengths of the programme in relation to its stated objectives

The following is a collation of the comments made by the participants on the above aspect of the programme. Comments from all participants have not been included. Where these comments agree with, and do not detract from those of other participants, they have not been included. In this way unnecessary duplication is avoided.

The participant comments are stated in surname alphabetical order. In a very small number of cases, the full comment is not given. In these cases the part of the comment quoted is considered to convey the essential meaning of the full comment.



Participant commentsTeacher D:

During the course teachers were challenged to recognize and question their current practices, and to review these practices in the light of the alternative views, which were presented. I believe the course achieved these objectives, for me personally .... not to any significant degree from the point of view of changing my position regarding teaching and learning, but it has stimulated me to clarify my thoughts ... and state my approach more succinctly - a particularly important aspect when we wish to convey our position to others (teachers and parents).

Teacher E:

As we looked at all aspects involved in teaching and learning, the process enabled us to continually question what we, as teachers in administration, are doing in applying our aims and objectives in teaching.

Teacher F:

The initial response to reading "the main purpose of the course" paragraph in ... the introductory letter, although not negative, was only luke-warm. The description sounded well and good, and at such face value the course had the appearance of a useful exercise. One was not quite sure, however, just what it really did mean.

A re-reading of these purposes now readily brings to mind a host of ideas, insights and attitudes of 'substance', rather than being platitudes. That the rather clinical (as stated) objectives appear now to be so vibrant is a product of a number of aspects of the course. Two particularly significant ones are:

- (a) The introspection demanded of the participants, in both the areas of theory and practices. This approach served well the purposes of promoting motivation and maintaining interest through the constancy of the course's 'visible' relevance.
- (b) The group dynamics, both at the 'macro' and 'micro' levels, generated a number of valuable spin-offs. The input of educators from a variety of backgrounds, styles and responsibilities, frequently enhanced the

quality of debate and review. Most interestingly, despite this range and diversity, it seemed that the issues were more clarified, and even conflicts resolved.

Here the course was successful at two levels. Participants had been led to a mutually understood dialogue, which enabled all to communicate in a meaningful way. That this had been successfully achieved should provide all with optimism that such an exercise should have some chance of success in the usually more restricted educational spectrum within one's own school.

#### Teacher G:

The course information states that "the main purpose of the course is to present teachers with a range of alternative ways in which they can construe their experience of teaching and learning." The course has largely fulfilled this purpose.

#### Teacher H:

My initial attempts at describing effective teaching and learning were, on reflection, rather clumsy, and without a basis of sound understanding of the theory as it translates into practice. As I reflected on these statements ..., I realized how much the course had clarified for me the link between curriculum development and teacher development. My background in the theory of curriculum development was too general, and the links had not been made in a clear way between theory and practice. Secondly, the course helped me to recognize the way in which I was looking at "the school" - more in terms of organisational development and professional development rather than improvements in teaching and learning, which might come through curriculum development and professional development. I believe the link between these three aspects was not strong enough previously, possibly also this was attributable to a heavy emphasis in previous courses or professional and organisational development.

Thirdly, the course made me look very closely at the way in which I was approaching the school's development needs (the ways in which teachers might change and improve their professional skills and subsequently the quality of teaching and learning). The course gave me renewed confidence and enthusiasm to approach individual teachers to

help them reflect on their teaching and learning (in a non-threatening way). I hope my change in approach, as a result of this course, will have long term and significant positive effects on teaching and learning and professional activities in my school.

#### Teacher I:

I think that when I came to the course I had vague feelings of why I taught in certain ways. Now I can put down succinct statements of why I teach the way I do. It took the three weeks of the course to accomplish this because while working through the course one is not quite aware that change is taking place, but in the grid review one became aware of the many subtle changes that had occurred. I now realize that there are many ways of presenting the curriculum, and can place myself in these categories.

The opportunities to discuss, reflect and negotiate were excellent, and I enjoyed the group discussions, which encouraged these activities. One very pleasing aspect was the opportunity to philosophize and 'cross swords' with the lecturer.

I also thought that the constant focus back to class-room teaching was very important.

#### Teacher K:

The main strength of the course, in supporting its objective of presenting "teachers with a range of alternative ways in which they can construe their experience of teaching and learning", was that it did provide this experience for me. Through the process of looking at ideas and theories, which initially seemed far removed from the classroom and my own experiences, and working through the process of relating these back to my experience, I gradually established a greater depth of professional reflection, professional dialogue, and established educationally meaningful ways of looking at, and discussing, my actual classroom experiences.

This is borne out when I compare my initial statements, or elements of effective teaching and learning, written at the beginning of the course, and my interpretation of these, to the same elements re-written at the end of the course; which show my ideas have become more succinct, better expressed, educationally, and give me a

greater insight into the gaps between my educational ideas and actual classroom practices. It has also provided me with a clearer set of educational ideals which I now feel I have begun to put into practice. In other words, as the course objective stated, I was able to establish my frames of reference much more clearly, and did appreciate the opportunities of being able to negotiate them with others, and review and revise them.

Teacher M:

After reading the objectives and having the experiences of the last four months, I must say that the objectives were well covered.

Teacher N:

The course has enabled me to clarify my own frames of reference by examining more closely the key words and phrases that I often use, e.g. facilitate learning, human relationships, the whole child. This is an on-going process I am continually engaged in. The course has enabled me to explore more fully some alternative frames of reference e.g. teacher-directed learning. The insights gained will form the basis for continuing refinement and classification of my personal philosophy.

Teacher O:

There is no doubt in my mind the course has caused me to look not only at my role as a teacher but also as a curriculum co-ordinator. The process of using the repertory grids as a review medium has achieved the objective of highlighting the need to review with respect to future orientation. The course has generated within me a desire to look forward and put into practice some ideas generated during the duration of the course.

Teacher P:

The prime achievements of the course for me has been the way it has helped me focus and clarify my ideas about teaching and learning. In looking at my initial statement about my focus class, and comparing it with my final statements, I can, on reflection, see a shift towards a much sharper focus. Because of this it will make it easier for me to justify my approaches to teaching and learning. This course has forced me to look at my

approaches and beliefs for teaching and learning, and reflect on these in the light of a number of different options, and then explore and test them against the views of other members of the group. The end result is a much clearer perspective of my role in the teaching-learning situation.

Teacher Q:

I feel the purposes of the course ... have been well supported. I found the model for the course - the relationship between curriculum development, teacher development and organisational development - particularly interesting, and the starting point for the course excellent. I feel I have had the opportunity to look at alternative curriculum models, and to recognise some of my own beliefs in them. Certainly, I have a much clearer understanding of my own underlying assumptions about teaching and learning.

Teacher R:

Firstly, I enjoyed the course immensely. This enjoyment has grown as the course progressed, and as I developed a better basis from which to consider curriculum development. For me, one of the strengths has been the time organisation, which has enabled consolidation at each stage, and the opportunity to review positions between sessions. Another advantage has been the cohesiveness and support within the group, and the ease of forming sub-groups for various purposes. The wide range of levels represented by the participants was of real value in ordering perspectives towards the learning process.

Teacher S:

The course did strongly support the course's objectives, and to me this occurred in the following ways:

- (a) The repertory grid approach allowed experiences to be distilled, objectives to be clarified, and methods to be examined.
- (b) The group work facilitated the necessary analysis that was seen as crucial to the course.
- (c) The (lecturer) drew the strands together and distilled the combined thinking (of the class), while comparing the findings to the

objectives. Thus the objectives and purposes were continually before us. They were our frames of reference.

- (d) The course successfully modeled what it was to teach.

#### Summary of comments

The individual and group purposes of the programme for the participants has been stated in the Introduction, section C(1). Specifically, participation in the programme should develop the participant's capacities to

- (i) recognize and describe;
- (ii) explore;
- (iii) review;
- (iv) revise and clarify;
- (v) communicate;
- (vi) share;
- and (vii) negotiate

the frames of reference used to describe effective teaching and learning for their focus class. Question (a) concerns the extent to which the programme has enabled each participant to have achieved these stated purposes.

An examination of each of the above responses reveals that all participants believed that these programme purposes had been achieved. As well as meeting these purposes, participants gave other achievements they considered had arisen from the programme. These included:

- (i) An increased capacity to describe effective teaching and learning succinctly;
- (ii) An enhanced ability to communicate with colleagues, particularly in describing effective teaching and learning;

- (iii) The "consistency" of the relevance of the programme;
- (iv) The enhancement of the quality of debate and review by a variety of educational inputs from other participants.
- (v) Facilitating and clarifying links between theory and practice;
- (vi) Helping the recognition of the link between teacher, organisation and curriculum development;
- (vii) New insights into the ways in which teachers might change and improve their professional skills;
- (viii) Providing a clear set of educational ideals on personal educational philosophy;
- (ix) A clearer understanding of personal assumptions regarding teaching and learning.

(b) Weaknesses of the course

The participants comments on the weaknesses of the course were as follows:

Teacher D:

The course presented me with some problems of understanding with regard to the interpretation of the grids, and the language presented in the readings (this may not be a fault of the course, as anything that is new worries me when I cannot understand it first up). Perhaps a mock up of elements and constructs and a grid for a class could have been presented and discussed with the whole group or small groups at the beginning of the course. This may have allowed me to immediately see the purpose of the repertory grid.

Teacher E:

Although I gained a great deal from using the Repertory Grid process in looking at my views of teaching and learning, I would eventually like to be able to use another process. Given the time that we had, and the material and issues we covered, I recognize that the period of time was just enough to become confident in using such a process.

Teacher G:

The only weakness of the course that I perceived was the inability of many group members in coming to terms with the purposes of the repertory grids. The main difficulties appeared to be in preparing elements and the subsequent constructs that gave a meaningful focus on the issues.

A further difficulty was the interpretation of the grids. Both of these problems were largely overcome by the end of the third week. This was achieved by the lecturer drawing the groups together to reinforce the best method of approach, and also to remind members that they ought to group issues wherever possible to get a broader view of what the analysis indicated. The lecturer's constant individual counselling during this period was invaluable.

My only suggestion of an improvement of this approach would possibly be the production of a model which would encompass elements, constructs, matrices, and, in particular, an analysis of the results. I feel that this would be of value. However, I recognize that the danger of this is to lock people into a set way of analysing an issue, which conforms to the model.

Teacher I:

If there were any weaknesses perhaps it lay in the structure of the timetable. The weeks were rather apart for me, and perhaps I would have arrived at my conclusions quicker than has presently occurred. This is in no way critical of the content, which I found most useful. Perhaps there should also be examples of the repertory grid of what we actually did, i.e. concentrated on teaching and learning, at the start of the course. Constructs could be discussed, and reasons for such discussed in the class, and this could be followed by an example of grid interpretation. All of this does not preclude the application of the technique to the readings as the technique proved invaluable in eliciting the necessary information.

Teacher M:

The weaknesses of the course are difficult to identify. There were times when I was frustrated and perhaps felt inadequate and confused, but these passed quickly.



Teacher N:

There is a large gap between the theory discussed and teaching practice. A lot of time was spent trying to bridge that gap. If the gap had not been so great, more time could have been spent examining the practical implications more deeply. This would have meant a greater focus on the "how", rather than the "why".

The large gap can also be explained in terms of the language used. Significant time was spent interpreting the language - reflecting on its implications. It may have been more useful to develop a language that interprets the practical situation.

The reliance on the repertory grid denies the importance of exploring in various ways. In the same way that it is important to explore alternative frames of reference, it is important to do so through a variety of methods.

Teacher P:

The major weakness of the course is that it does not directly impinge on the teaching situation. In clearing my thinking regarding the teaching-learning situation, and developing a set of ideals, it has tended to do so in isolation from the actual classroom. The focus class helped to bring things back to this level, but in reality for me, as the course progressed it became more and more difficult to take my thinking back to the real-life teaching situation, and for me this was a contradiction to what I wanted from the course. Module B was especially instrumental in taking me away from this reality. However, Module C helped overcome this problem and brought things more into perspective, and, on reflection, back to reality for me. In retrospect, this weakness that I have identified was only a weakness because I brought pre-conceived expectations. In looking at the outcomes, now, I can see a great value in this method of reaching a set of ideals, because I now have a good basis for reflective thinking when justifying my approaches to teaching and learning.

Teacher Q:

The only weakness I can see of the course is the time factor, which is difficult to alter. The possibilities which are opened up by discussion

cannot be extended as far as I would like, but this does leave me the opportunity to follow answers up as they are relevant to me.

Teacher R:

The focus class was, for me, a problem. By the end of the course, however, I came to the realization that the real problem was one of isolation. I had lost my classroom objectivity, my child-centred perspective, and had become systems-oriented. Too much time spent away from the classroom!

Teacher S:

My main concern is not knowing how I am going - not being aware of whether I have done enough - or what enough is. It is personally satisfying to not have graded assessment but an indication is needed as to where one is at while the course is on.

Teacher K:

The only weakness was one of process, as I did find the three weeks extremely intense in terms of workload and the depth of thinking and input required. In week three, in particular, the number of repertory grid interpretations which needed to be completed did begin to assume rather large proportions and meant that, in some instances, our work in groups, in particular, became very task oriented and in order to "get the job done" consensus of ideas tended to be rushed or forced in order for the work to be completed. Although the repertory grid approach was a successful professional development exercise, it may have "lightened" the course a little to have other methods or "processes" as well. I am not stating that the workload is too great as I do not believe it is, but rather, a little too intense at times, during the three weeks of the course.

Summary of Comments

The major weaknesses identified by the participants were:

- (i) Difficulties experienced in developing and interpreting the repertory grids;
- (ii) Difficulties with some of the language used in the readings for the programme;

- (iii) The lengthy separation in time of the three periods of the programme;
- (iv) The large gap between the theory presented in the readings and actual classroom practice;
- (v) That the programme did not "directly impinge on the teaching situation" (Teacher P);
- (vi) Uncertainty with progress during the course;
- (vii) The intensity and high workload of the course.

(c) Which aspects were of professional assistance and why?

The following comments were made by the participants:

Teacher D:

I have been assisted professionally because I was continually challenged to assess my position on teaching and learning (Was I actually doing what I believed I was doing?). During the course I was able to discuss these thoughts with staff (of my school), and to challenge them to question their own approaches to teaching and learning. I do not believe I would have questioned this matter as deeply had I not been introduced to repertory grids, and their implications for teaching and learning.

When working in groups, I found the discussions with colleagues from the secondary area challenging and helpful, particularly when interpreting the grids (Peer teaching certainly worked for me!). I also found that I had something to share with them regarding organisation and approaches to child-centred learning. The modes of working in smaller groups allows for the freer expression of ideas and risk taking, exactly the model for a holistic approach to teaching and learning.

Throughout the course, I often challenged the worth of using the repertory grid, but I could see that there was value in the exercise. We did express thoughts in the groups that we may not use the grids as such in schools, but I believe they have been of benefit and we would not have to

complete them as fully when reviewing particular aspects of teaching and learning.

Teacher E:

My professional development from this course is two-fold. Firstly, as a teacher it has made me reflect on my own educational philosophy. It was obvious from some of the interpretations of the work I covered I am in conflict, and that I question and need to evaluate more closely what I believe in teaching.

This personal review would, hopefully, enable me to go through a process with other staff to evaluate one's own school philosophy, the classroom practices, that are evident in the school that I am in.

As part of my position there is a need for me to converse with parents, members of the teaching profession and other people involved in the community at large about educational theory. Because of my reflection during this course I am sure I will be able to reflect a more accurate degree of educational philosophy.

Teacher F:

In essence, the course alerted me to a number of basic requirements for curriculum development, and provided insights into some useful methods suitable for such activity.

The quanti-essential requisite of establishing some common level of agreement by staff before curriculum negotiation can begin was appropriately highlighted, and its priority is clearly understood. The necessity for obtaining such accord would not have been appreciated in the past. Better than this was the exposure to a device for finding the necessary areas of agreement.

Concomitant with this was the insight gained on the importance of language and terminology when the curriculum is under discussion. The basic necessity of ensuring such language is "common" in meaning to, and understanding by, all was enlightening, particularly if the educational dialogue is to be meaningful and productive.

At a psychological level an outcome from the course would be a greater personal confidence and

certainty; this together with a much clearer perspective of the future for teaching should produce a more effective learning situation.

Teacher G:

In the first instance, the nature of the group provided an excellent basis for professional growth. The cross-section of people from a variety of educational institutions, and at various stages of experience and positions of responsibility, have contributed to a broad view of education being elucidated rather than a focus on particular issues.

I found the selection of readings provided gave a basis for discussion which, while theoretical, was easily applicable to the school and classroom. The contrasting views given stimulated the group and enabled, or forced, members to identify their beliefs with positions held by the range of writings. Also, the paper prepared by the lecturer, and used as the medium for elucidating the repertory grid was concise and stimulating. The method of writing employed made the task of developing elements and constructs much simpler.

The issues -

Curriculum development and objectives  
Curriculum development and student abilities  
Curriculum development and student-centredness  
Curriculum development and educational processes  
Curriculum development and conversation in education

were all relevant in the sense that the current debate in the secondary field on assessment and certification cannot proceed without their consideration.

Teacher G:

I feel I have come away (from the course) with a much better understanding of what conditions are important for effective teaching and learning.

I have clarified my own position in relation to where I stand in regard to the various models for curriculum development. It is more informed and flexible.

My increased knowledge of the various curriculum approaches has enabled me to more adequately

interpret and describe my own-position as well as identify what others are doing.

Being able to discuss, in a non-threatening way, with a large and diversified group of people, has been of immense value. This also helped me to reflect on my own thoughts and feelings about how I operate.

Teacher H:

I needed help in sorting out why I wanted a change at school. I know that a curriculum, which was student-centred and had areas of negotiation, was the direction the school needed to move towards, but I needed to clarify my ideas and get theories, which would be applicable to back up the practice. The course also provided, as well as the theory, some excellent opportunities to hear and discuss the very thing we needed with primary school practitioners. These colleagues provided an excellent stimulus, helped in clarifying concepts, and convinced me that these ideas were correct. Possibly, the most important thing was to look at the various curriculum possibilities (objective, negotiated, student-centred, etc.) and to see how each operated with their various strengths and weaknesses. Finally, I have a set of references to take back to use as arguments and to give strength to the ideas behind the proposed change.

Teacher K:

.....I feel that an important point needs to be made here. From the outset of the course, because dialogue was continually related back to my own experiences, and because of the personal interest of the lecturer and class personalities, I felt my professional contributions were valued and at no time did I feel my personal beliefs about education were being criticised, threatened or belittled, a feeling I did experience in a previous professional development course.

Teacher M:

Several aspects of the course were of assistance to me, professionally, and they are the following:

- (a) The opportunity to mix with colleagues, and discuss not only the relevant topic but also a range of other matters;

- (b) Being provided with a body of knowledge, concerning curriculum and its management and delivery, which allowed or freed me to examine my own teaching style, methods, etc.;
- (c) The realization that, as a result of the preceding points, I still have a multitude of knowledge and experiences in front of me;
- (d) Being 'forced' to put my thoughts on paper and to critically examine them. This also refers to the spoken word.

Teacher N:

The opportunity to discuss educational issues with teachers from other teaching areas has provided some fresh inputs to my thinking.

The opportunity to hear the lecturer's perceptions of the issues also acted as a stimulus to my thinking.

The course has provided the stimulus to clarifying my terminology re education in general, and my teaching in particular. This further forms a basis for the continuing development of my personal philosophy.

The notion of a professional journal has prompted the establishment of such a journal. This is having the effect of focusing, more clearly, my professional development and the contributions I make within the school as a result of that development.

Teacher O:

It has broadened my perception of a negotiated curriculum in terms of content and such negotiation involving industry/commerce employer and employee representatives taking part in a meeting organised to develop a curriculum, and satisfying the needs from a product point of view. While this is still important, I can see that there could be opportunities to negotiate, in a wider sense, the whole curriculum for both teachers and administrators.

Teacher P:

The areas of the course which were of assistance to me included:

- (a) Group work;
- (b) Analysis of current approaches;
- (c) Developing techniques for sharpening focus and breaking abstract theories down into realities for me;
- (d) The use of a focus class.

The group work was especially valuable for me, because it gave me a chance to "bounce" views and ideas. I find this very valuable for clarifying my ideas, and it forced me to be able to explain these ideas in a meaningful way to other professionals.

The analysis of current approaches to teaching and learning, after direction and reflection, has helped me to re-look at my own situation.

The third area which I have found useful, I think will even be more useful, on reflection back in the college.

Finally, the use of a focus class, although midway through the course seemed a long way away, has now become a strength in the reflective evaluations of the course.

#### Teacher Q:

All aspects of the course were of professional assistance to me. I found the information provided an excellent basis to build upon. The group interaction, and the different perspectives which were portrayed, all forced me to evaluate my own assumptions, and, if necessary, justify these. I have come to a far greater understanding of myself and my approach to teaching and learning. The course has stimulated me, and provided a focus for further development of my own curriculum.

#### Teacher R:

The course, itself, has enabled me to re-order my perspectives, to re-develop and focus my views. It has also expanded my appreciation of what my staff are doing, and provided a better basis for discussion and negotiation.

The use of the repertory grid has been of value. Firstly, because it helps to focus the issues, secondly because the constructs are classroom-based, and nearer to an operating and real-life level. Thirdly, because of the revealing nature



of the interpretations which arise from the analysis.

Teacher S:

I believe the repertory grid approach has provided me with a very useful administrative tool in my role as Senior Master because it gives me:

- (a) A means by which to analyse the curriculum currently in existence - to review it, and see if it is doing its job;
- (b) A means by which to develop new curricula;
- (c) A means by which the administering of the curriculum can occur;
- (d) A means by which problems that may occur with a curriculum can be drawn out and examined as to why they became problems;
- (e) A way to analyse staff beliefs, and subsequently help them.

The main benefit is that this technique enables you to..... arrive at the essence of what you seek. It is a tool that will minimize distraction, and not knowing how to proceed. It provides you with a path to follow, and therefore increased one's personal efficiency, while also increasing one's credibility with those with whom one works.

It is an administrative tool that allows innovation, analysis and correction. It is a professional tool, and such tools are certainly necessary in the education field today where accountability is becoming a real issue. Staff today need to be more than just a conveyor of knowledge; they have to understand the intricacies of working with other people, changes in the total school curriculum, and the community demands. Thus they need to become increasingly professional in all aspects. Management skills are, therefore, becoming an essential ingredient of one's professional make-up.

I now realize that you need to look carefully at what others are saying. I can now see, by the grid, more clearly what others are saying.

Summary of comments

The following aspects of the programme were identified, by the participants, as being of professional assistance:

- (i) The continual challenge to perspectives and beliefs on effective teaching and learning;
- (ii) The role of repertory grid analysis and interpretation in this challenge;
- (iii) Discussions, in groups, with other participants, including the sharing and free expression of ideas;
- (iv) An enhanced capacity to communicate on effective teaching and learning with non-teacher groups such as parents;
- (v) Highlighting the need to establish a common level of agreement before negotiating any aspects of the curriculum;
- (vi) The emphasis on clarity of language and terminology;
- (vii) Increased personal confidence and certainty;
- (viii) Inputs from a cross-section of the various sectors of education;
- (ix) Obtaining theories which were applicable to practices;
- (x) Emphasising a variety of curriculum possibilities;
- (xi) The valuing of the professional contributions of each participant;
- (xii) A body of knowledge which helped in the examination of teaching styles and methods;
- (xiii) Being "forced" to commit thoughts to writing and to critically examine them;
- (xiv) The opportunity to hear the lecturer's perceptions of the various educational issues;
- (xv) The establishment of a professional journal;
- (xvi) The broadening of the perception of a negotiated curriculum;
- (xvii) The development of techniques for clarifying educational theories;
- (xviii) The use of a focus class;

(xix) Providing a focus for further teacher and curriculum development;

(xx) The demonstrated potential of repertory grid techniques and interpretation in  
     analysing current curricula,  
     developing new curricula,  
     administering curricula,  
     considering curricula problems,  
     analysing staff beliefs,  
     and innovation, analysis and correction.

(d) Aspects which were not of professional assistance

Teacher E:

Because of the nature of the course, the work we covered, the people who attended, I gained knowledge and new perspectives from all aspects involved in the course.

Teacher G:

I believe that the course has, overall, been of real professional value.

Teacher H:

I would argue that the time was ripe for me to soak up some intensive work on curriculum development, having completed a curriculum workshop, which was a broader course focusing on a number of issues, and certainly not as intensive as the full week sessions. My professional needs were still very high in regard to ways of helping teachers improve their teaching and learning. If there is a weakness in the course it would be that it could have a follow-up with an opportunity to pursue certain preferred approaches and reflect on them with the course leader i.e. go back to school, engage in a particular activity coming out of the course, and reflect on it with the support of the course leader.

Teacher I:

On reflection, even though the sessions were long, and at times arduous, there was nothing which was not of assistance.

Teacher N:

While the repertory grid process did contribute to clarification of ideas and raise some interesting issues, I am unlikely to try it in the teaching context. I am unsure of how much the clarification was the result of the grid, and how much was the result of other processes, e.g. group interaction, the lecturer's input, individual reflection.

I think that I go through a repertory grid process internally - examining alternative view points, looking for connections. It has been said of me that I see too many viewpoints!

Teacher O:

There were parts of the course that I had reservations about.... However, even allowing for that feeling, I cannot say they were of no professional value or assistance....

Teacher P:

In trying to pick out areas of the course, which were not of professional assistance, I really need to go back to the college and reflect. For instance, some of the articles looked at were covering very good territory, but the method used by us looking at these ideas were new, and, on reflection, were important from the points of view

(a) in developing skills, in analysing initially, theoretical arguments, and bringing them into meaningful reality, and

(b) in establishing a knowledge base on current thinking in this area.

Hence, at this stage, I am unable to give an effective answer to this question.

Summary of Comments

The participants identified the following aspects of the programme as not being of professional assistance:

- (i) The absence of a follow-up period with the "opportunity to pursue certain preferred

approaches and reflect on these with the course leader "(Teacher H)";

- (ii) Uncertainty regarding the possible use of repertory grids with teachers in schools.

(e) Approach as a possible model for teacher development

Teacher E:

The model used would be a good one in that if everyone contributes in a non-threatening way, on issues they feel as important, the process could be very valuable. Hopefully, from using such a model the process would grow to the point that whole group negotiation would occur. It is also important that, within a staff, people get the opportunity to relate to all members through changing group structures or similar, on different issues. I feel that the best professional development occurs when staff expertise is used within the staff and, providing there is open communication between its members, more understanding and acceptance of the issues will be achieved.

Teacher F:

Some of the perceived benefits from the group work have been mentioned already. The collective analysis of study topics, the different points of view, and particularly interpretation, did much to broaden not only the issue under review, but each participant's outlook on it. The wisdom of the corporate body seemed to inevitably result in elements and constructs tighter in thought, more relevant in application and sufficiently broad to allow for acceptance by all the group members. This last point has an important implication for achieving and identifying common and opposite points of view.

The atmosphere of cohesiveness quickly evident facilitated, in a significant way, towards the gaining of insights by members. The regular change in its composition stimulated the group's dynamics and prompted an influx of alternative viewpoints. However, the timing of the first group interchange may have been premature - it seemed to be disruptive to the difficulty in coping with the repertory grid, with establishing

routines and relationships, and with getting to be at ease with the task at hand.

The phenomenon of how the group members, relatively quickly, assimilated the 'finesse' of dealing with the educational language was itself enlightening. The analytical powers evident in pulling apart "meanings" was heady stuff at times. When this was allowed to "have its head" in week 3 with illusive examination of the readings, the rapidity with which the exercises were devoured was enthralling.

So despite the nature of the group with its diversity of interests and backgrounds, which itself yielded insights and perspectives, the course and the objective of meaningful discourse by a varied group of educators had not only be encouragingly achieved, but was evidence of a suitable model.

#### Teacher G:

The course approach had many aspects that could usefully be part of a professional development model. In the first place, the discussion papers provided were appropriately written, and the topics chosen gave a sound basis for the group to discuss the issues that arose. The format of some lecture and questioning sessions, more general discussion and group work and some individual writing was a good blend which suited the group's needs. The group quickly developed a rapport, and members participated freely without feeling threatened. It was interesting to note that when it was suggested that the groups be altered there was a general resistance as members of the smaller groups had developed an empathy with each other... The group contained members from a wide range of backgrounds. I thought that this was extremely valuable, particularly in general discussion. It may even be useful to structure enrolment in such courses so that there is not a clear majority of one interest group or any section of the teaching service.

#### Teacher H:

In a three by three-day workshop last year entitled "Leading Learning in Large Primary Schools" I believe I touched on my personal professional development needs. Although these workshops helped they were not sufficiently intensive nor did they reach the depth of thinking

that was achieved in this course. I think it has been an excellent model that has produced a tight, professional, supporting group, who were totally honest with their feelings and attitudes about teaching and learning. I have come away from this course much more exhausted than any other course, and yet I felt that I have gained answers to many of the questions that have perplexed me for a number of years. The structure ensured that time on task was not missed. There was no opportunity to drift away.

Teacher K:

As I have found the course to be professionally valuable in clarifying my frames of reference for reflecting on effective teaching and learning, I feel other teachers would also benefit in the same way. However, the approach is not one which, I feel, could be squeezed into a short space of time or modified or shortened, as it appears to me to follow a series of definite steps, and I personally felt the three complete weeks were necessary to take me from my original position to the position I am now taking. Therefore, if teachers were to experience this particular approach it would need the necessary time span to have sufficient impact, otherwise there may be the danger of teachers losing sight of the relevance and end points of the course.

Teacher M:

Upon reflection and examination, I must say that the course approach was tailor-made for my personality and wants. As with the majority of teachers I am a "people-person" and the course encouraged communication. The lecturing was held to a minimum and all of us knew that we could interject with comment. The group work was excellent, and the different groupings enabled us to communicate with our colleagues, who all have similar and dissimilar ideas and thoughts.

Teacher N:

The key aspects of the approach used, as I see them, are:

- (a) negotiation of the course by those who have a stake;
- (b) group discussion of issues;
- (c) high degree of interaction;
- (d) respect for individual contributions;

- (e) concern with overall development;
- (f) emphasis on the process as opposed to the product.

These are elements that I identify with strongly and believe should form an integral part of any professional development programme.

Perhaps there was a need to be more experientially based. A lot of experiences were reflective in nature.

#### Teacher Q:

I feel the basic model is fine, but included in the program, in my opinion, there should be a mechanism whereby more opportunity to debate the 'pros' and 'cons' of the theories are available. Also to hear of experiences of other members of the group with respect to the topic under discussion. Also the small group situation worked very well, but perhaps went on a little long, and a recall of the full group for shorter periods may have been useful.

#### Teacher P:

The course approach was excellent providing a model for the professional development of teachers, because it stresses the central nature of the learner in the learning process. Because of the interaction formed the basis of the program, the learner (myself) was continually being confronted and freed to react. To do so effectively has caused a clarity of thinking, and the development of skills in conversation in the area of effective teaching and learning.

#### Teacher Q:

The course model suited the subject well. It was a little difficult at first due to unfamiliarity with the grids and also with concepts, but this quickly disappeared. I find the small group approach very useful, as everyone has to participate. I also feel the changing of the group is essential in order to widen horizons and perspectives for the participants. I liked the way the groups are kept heterogeneous. Perhaps the time factor again prevented more sharing of group results because it appeared these differed greatly in some respects. The class size was good - everyone had the possibility for input. I feel this is lost in a larger class.



Teacher R:

For me the approach was ideal. It has accommodated a wide range of interests, levels, constraints, freedom, etc. and focused on group input to help overcome the problems. Early frustrations were soon dispelled, and the participants were able to recognize the restrictions within which they had to operate, discuss them, appreciate them and often dismiss them as being able to be overcome.

Teacher S:

- (a) The course modelled what it was setting out to teach and it did this successfully because people came away feeling as if they had achieved something worthwhile personally.
- (b) The group work to me was most rewarding, yet I believe that this was due to the personalities. Time was a factor here. You did find that you were rushed at times - that you did not totally follow something all the way. But the group concept in itself has a lot of possibilities. The input, the clarifying and the arriving at a personal viewpoint was good. The group provided an informed sounding board. The group approach gave you confidence and you could take this confidence back into a larger group lecture, because you had already clarified your view point.

Summary of comments

The participants comments on the use of the approach taken in programme as a model for teacher development may be summarized as follows:

- (i) The success of the model depends upon participants contributing to the programme in a "non-threatening" and open way (Teacher E);
- (ii) The processes of the programme could grow to the point where "whole group negotiation" would occur (Teacher E);

(iii) The processes of the programme did "much to broaden not only the issue under review, but each participant's outlook on it" (Teacher F);

(iv) In supporting the approach taken, teacher F stated that:

"The wisdom of the corporate body seemed to inevitably result in elements and constructs tighter in thought, more relevant in application, and sufficiently broad to allow for acceptance by all group members. This (last) point has an important implication for achieving and identifying common and opposite points of view".

(v) Group cohesiveness is an important factor in the success of this approach (Teacher F);

(vi) Regular changes in group composition stimulated the group dynamics, and prompted an influx of alternative points of view (Teacher F);

(vii) Appropriately written readings can form a sound basis for group discussions;

(viii) The blend of lecture and questioning sessions, general discussion, group work, and some individual writing was advantageous for teacher development;

(ix) Diversity of educational backgrounds of the participants within each group was extremely valuable;

(x) This programme helped participants reach a depth of thinking. For teacher H:

"I think it has been an excellent model that has produced a tight, professional and supporting group, who were totally honest with their feelings and attitudes about teaching and learning".

(xi) The approach is not one which "could be squeezed into a short space of time, or modified or shortened, as it appears to me to follow a series of definite steps, and I personally felt the three

complete weeks were necessary to take me from my original position to the position I am now taking" (Teacher K);

(xii) The approach encouraged communication;

(xiii) For teacher N, the key aspects of the programme which are necessary parts of any teacher development programme were:

negotiation of the course by those who have a stake,

group discussion of issues,

high degree of interaction,

respect for individual contributions,

concern with overall (teacher) development, and

emphasis on processes, rather than outcomes;

(xiv) Increased opportunities to consider the advantages and disadvantages of various educational theories may be desirable;

(xv) The central place of the learner in any teacher development programme was stressed.

(f) The notion of professional development assumed by the programme

Teacher E:

As the group is composed of people who all have a stake in what they are doing, have expertise in some area, and were able to relate and share on particular issues and ideas, the course used in adult learning/process theory.

Teacher F:

The style, content and method created no discord, nor did any assumptions cause any feelings of inadequacies, or disjinders. The assumptions made seemed entirely appropriate and fair, and did much to avoid dealing with "the known" and to give the material learnt, and the possibilities "opened", a practical, and, therefore, worthwhile bent.

Teacher G:

The input of members in a smaller group enables a wider participation with a "no threat" environment. Members developed confidence, which was assisted by the structure suggested by the lecturer. The effect of having a wide range of members in groups was to enable members to speak with a degree of authority on their experiences as each other member had something to learn from them. With the lecturer joining each group for a period of time, issues were able to be clarified, and the groups prevented from becoming too anecdotal or side-tracked. Within the divergent views common ground was identified. In a sense, the course approach contained the elements of content that it was teaching in that it was developmental and encouraged us to form a focus on our practice.

Teacher H:

I believe that this is one of the most positive ways that professional development can be enhanced. From personal experience with policy development, organisation development and various strategies and models I have used in my school experience, none seems as valid and appropriate as this. The notion of working intensively with people encouraging them to reflect on practice, mixing this with the right amount of theory, and so on, is an excellent one. Small group activity was particularly satisfying.

Teacher I:

Yes, a very good approach and requiring a great deal of soul searching. Most people could not help be aware of the depth at which they looked at their reasons for teaching in their particular style, and I feel no one could remain unaltered after the course. The repertory grid technique is very useful for this 'self-examination', and soul searching, and it has the serendipity effect of finding out the 'tutor' no matter how you try and cover it up. This comes about by the cross-referencing of constructs and elements and forcing the participant to look at 'alternative' methods. If you believe this then it presupposes an alternative method, and you can take your position in the continuum. Therefore, the strength of the approach is in 'stripping down' the various layers of your beliefs, and making you aware of why you hold these, rather than taking a body of knowledge

and adding that to your personally held body of knowledge as other courses have done. It was a critical analysis that was also effective.

Teacher K:

To me the underlying assumption behind the conducting of the course was that we were all professional people with valuable ideas and experiences, which would be built upon and related back to theories, rather than a set of theories being examined for its own sake as a valuable body of knowledge for all teachers to acquire. Obviously, if this was the assumption, then the idea of groups and individual contributions as opposed to a didactic approach, would actually follow from this.

The use of small groups meant that all members had the opportunity to participate, whereas in larger groups the conversation tends to be dominated by one or two individuals, as I recently experienced in another course. Thus, as mentioned previously, the individual feels his contribution is recognized and valued.

One of the most fascinating aspects for me was the subtle way in which our lecturer's point of view slowly emerged and was not really made clear to me until the end of the course. It was only then that I had become familiar with his particular bias. However, it became obvious that we had been gently led through this particular bias, during the course, so that a great many of us found ourselves looking towards a particular teaching style which was more student-centred and took less account of the subject approach to curriculum development.

Teacher M:

The emphasis on the process provided a good model for any staff development programme.

Teacher O:

I have no problem with this. It is to my mind a professional development activity and had professional people as participants. It seems to me that the course demands a degree of commitment by participants. These demands generated in me a feeling of studying a course at a professional level and had "worth" about it. I consider the

emphasis on learning linked with organisation and staff development most appropriate.

Teacher P:

The notion of professional development assumed by the course has been just that, the development of professionals. The structure of the course has ensured that all participants have started from common ground (focus class), which has been a basic reality from which ideas and skills have developed. To take part in the course each member has been forced to take his or her reality into each new situation in an interactive way. Hence a development has taken place.

Teacher Q:

I think the course assumed an adult learning basis. That is, some experience in curriculum management was assumed. Motivation was assumed, and every attempt was made to relate theory to actual experience, i.e. relevant to our teaching practice. It assumed that all members were, and would be, active participants. It also assumed that all members had a worthwhile contribution to make, which in my opinion they did.

Teacher R:

The strength of the course was for me a good deal involved with the dynamics of the whole group - small group - individual reactive approaches. The learner was central in the development. The curriculum was allowed to flow and ebb to suit the needs of the learner. Assessment was individual learner based. Personal needs and interests were accommodated. The body of knowledge was quite significant, and for I am still, and probably will be for some time, making discoveries about what was involved. Direction was maintained by subtle suggestions and provision of alternatives. A role model of a teacher was embedded within the course. Interest was maintained through relevance of both material presented and activities used as vehicles. As a class we were taught a lot about our own processes of learning, and perhaps were able to reflect on the importance to the learner of learning how to learn.

Teacher S:

The course approach was developmental and the outcomes also recognized this - this assumed we

had the necessary group skills. The group emphasis made the assumption that group skills were there. The course emphasised teaching and learning as an approach to curriculum management. The assumption was made by the intensity of the weeks that people already had the necessary skills. The topics chosen were relevant to current educational trends. The group dynamics were crucial and the groups had to run for the course to be successful. It was assumed that the group would provide "the necessary sparks". It was assumed that people had already thought deeply personally about where "they were at". It was assumed that the readings were basic to the analysis and on the whole I found them to be so, but the readings on Truth were very abstract. As I came "to grips" with these readings though I got more from them.

#### Summary of Comments

The comments made by the participants may be summarized as follows.

- (i) The programme used an adult learning theory;
- (ii) The style, content and method of the programme did not create any feelings of inadequacy among the participants;
- (iii) The teaching of the programme was developmental, and encouraged a focus on practice;
- (iv) The approach appeared to be more valid than other models of professional development which some participants had used;
- (v) Small group activity was particularly valuable;
- (vi) The repertory grid technique was useful for "self-examination and soul searching" (Teacher I);
- (vii) The strength of the approach was in "stripping down the various layers of your beliefs and making you aware of why you hold these, rather than taking a body of knowledge and adding that to your personally held body of knowledge." (Teacher I);
- (viii) ".....the underlying assumption behind the conducting of the course was that we were all professional people with valuable ideas and

experiences, which could be built on and related back to theories, rather than a set of theories being examined for its own sake". (Teacher K);

(ix) The approach involved "a particular teaching style which was more student-centred and took less account of the subject approach to curriculum development". (Teacher K);

(x) The course demands "a degree of commitment by participants" (Teacher O);

(xi) The "emphasis on learning linked with organisation and staff development" was considered most appropriate (Teacher O);

(xii) The conduct of the programme assumed that all participants would be "active" and "have a worthwhile contribution to make" (Teacher Q);

(xiii) "The curriculum (of the programme) was allowed to flow and ebb to meet the needs of the learner (participant) (Teacher R);

(xiv) "Assessment was individual learner (participant) based" (Teacher R);

(xv) Direction of the programme was maintained by subtle suggestions and provision of alternatives (Teacher R).

(g) Advantages and disadvantages of repertory grids  
Teacher D:

Throughout the course I often challenged the use of the repertory grid, but I could see there was value in the exercise. We did express thoughts in the group that we may not use the grids, as such, in the schools, but I believe they have been of benefit, and we would not have to complete them as fully when reviewing particular aspects of teaching and learning.

Teacher E:

Using the grid method over the three weeks of the course, I have been able to reflect on my teaching practices and philosophies. The process is good in that, after time, I was able to do it



efficiently and able to reflect. However, I would find it difficult to use with staff because of a time factor it does require. Thus frustration would perhaps interfere with the purposes.

Teacher F:

While being prepared to accept the claims for their practical usefulness - at least for an experienced operator - when applied to a variety of situations this component of the course brought most discomfort for me. This may be because they involve demanding mental exercises, or at least so when used in such a 'jargon' filled world as teaching, or one wonders whether they suit better when background skills are held. It is appreciated that they provide a systematic way of examining a number of problems, and that they are most successful in making us work at ourselves as teachers.

However, the feeling of unease remains at the close of the course, and this I regret. Perhaps the idea of a model may have helped by more quickly making their operations understood. Although I can see myself using them at a rather fundamental level of incidental construct placement, I feel inadequately prepared to apply them myself in the future - at least at the time of writing. This reticence, I regret.

Teacher G:

Because repertory grids were new to the group it took some time for most of us to come to terms with what was being attempted. This applied particularly to the development of constructs and the analysis of the grids. Once we had had some experience in trialling this approach it became apparent that repertory grids were valuable as a method of analysing our thoughts and beliefs. The grids enabled us to go back to a fundamental position with regard to teaching and learning. It was this simplicity that I found useful as it gave a practical insight into the relationship between theory and classroom practice. The ordering of one's thinking is quite difficult without some sort of structure such as that provided by the grids. I think that it is important to note that the benefits are largely personal, and, if introduced as a staff exercise, could provide considerable threat to staff members. The exercise whereby we analysed pieces of literature would, perhaps, be a good group exercise so that

the techniques would be developed for a personal enquiry by teachers which would not be open to public scrutiny.

Teacher H:

Initially, I was not terribly keen on using them, but as the course developed their effectiveness became more apparent. They are a non-threatening way of reflecting on one's thinking and preferred practice, and coupled with the two aspects of elements and constructs interpretation, provide additional focuses for looking at oneself.

Teacher I:

This involves four basic techniques - (1) eliciting elements (2) constructing bi-polar constructs (3) arithmetical manipulation (4) interpretation and soul searching.

Presently, the easiest of these is the arithmetical manipulation, but practice in this should not be overlooked as it can cause some difficulties. In eliciting the elements, this asked teachers to consider what are the main issues and what is important for them. Then, possibly, the most important section is the construction of the bi-polar constructs when teachers would be forced to look at alternatives, that their stand was not the only one but immediately gave rise to an opposite new. The application of this section of repertory grids several times would assist in modifying views so that eventual agreement could arise. It also forces the development of a new discourse or language so that teachers can converse and, hopefully, reach agreement or a starting point. The last section on interpretation is basically for the operator. I found that over the period of time that my frames of reference had changed as well as certain sections had become more closely defined.

I would generally say then that the technique does provide a 'non-threatening' vehicle for discourse, it provides a language generator, and it provides a means of stripping off the assumptions as people have to lay bare the true frames of reference.

Teacher K:

To begin with, the actual process of completing a repertory grid appears extremely daunting,

particularly to a non-scientific, non-mathematical person. It is not until the process has been completed that, as if by magic, the main points of one's thinking are succinctly revealed. This is the only method I have personally experienced, which enables me to so clearly relate theories back to my actual personal educational beliefs and practices. Even though I find the process not always attractive, the end point is very worthwhile as a means of reducing theory to practice.

Teacher M:

The repertory grid definitely helped me to analyse and interpret my views of teaching and learning, but I feel I went over the same ground too many times. I feel pleased that I now feel secure in my knowledge of the mechanics of the grid, even triads, but I would like to utilize the grids on another topic.

Teacher N:

The technique can become more important than the issues. It really took us (or at least me) till the third week before we were able to complete the grids quickly and effectively. Even then, I suspect the issues were issues that had been raised earlier.

I wonder whether the technique allowed us to get deeply enough into the issues as a group. It may have individually, but it would have been interesting to see how deep we would have gone as a group.

For classroom teachers, I would prefer a more direct relationship between teaching and learning and classroom practice.

Teacher O:

I have reservations about the repertory grids when trying to apply them outside a theoretical environment. Perhaps there is a simpler, more streamlined, model that would achieve the same ends. (Or is it a tactic by you to generate deeper thinking?) Also I did not fully understand how repertory grids worked. There is still some mystery about it.

Teacher P:

The use of repertory grids has been valuable in the way that it helps clarify thinking. It forces the user to look critically at the meaning of statements, and to develop a clear set of statements which have meaning. The bi-polar grid was particularly important in focusing the meaning on statements and enabled a condensation to basic elements some of which were initially hidden in a verbose, undirected set of statements.

Teacher Q:

Repertory grids are a very good method of forcing one to look at assumptions about teaching and learning. There are two drawbacks that I see. Firstly, they do take time to get used to, and this has the possibility of causing frustration if value is not perceived fairly early.

Secondly, I feel that as the development of constructs is so vital perhaps more emphasis should be placed on these. It is very easy to develop constructs which are markedly bi-polar in character, but, to me, this does not necessarily elicit subtle assumptions which we make in our teaching and learning. They therefore need to be developed in such a way that slight differences become visible at interpretation.

Personally, I found this a very good method, and I am rather shaken by what I have discovered about myself.

Teacher R:

The use of repertory grids as an instrument for self-analysis was useful and it ensured a focus. It continually re-channelled thinking around the elements and constructs elicited, and focused the discourse back on the purposes it was meant to serve.

Teacher S:

The repertory grid made me distil one's thoughts. By providing a framework it made one more comfortable with the analysis process. It has given me a set of beliefs as to what I see as fundamental to me and to my teaching. It clarified that to get agreement between different views then you have to go back to a common ground and work for these.

It can be used in a very simple, and non-threatening way. It makes you order your thinking; it allows you to compare and contrast and then to draw conclusions. You need to continually relate the grid back to your class if you wish to retain a clear view of your direction. The doing of the grid was important because it blended the theory and the practical. It gave as an outcome a practical insight into relationships in a curriculum, in teaching and in learning.

The integration and sharing aspect caused a staff commonness to occur; a shared vision could arise from this.

(It) provided a crucial tool for analysing literature. It allowed one to take a comment and to follow it through to see the full implications of what is said. The grid allows me to see beyond the obvious.

Forming bi-polars made you think about alternatives. You had to see other views. Then you could decide what had the most relevance to you.

The group discussion aspect was absolutely crucial. It provided a sounding board effect.

The grid provides a visual/concrete picture which is not abstract. The correlation matrix is a "ready reckoner" - you immediately see the highs and lows.

The interpretation allows you to draw out and internalize the obvious, to see previously unrelated points in your mind, and thus it is a mechanism for verifying one's educational stance. It gives your philosophy substance (a concreteness) and, therefore, evidence. You now can talk from a known and rational platform. The focusing meant you took the grid from the abstract to the practical.

The grid to me was a most worthwhile professional tool.

#### Summary of Comments

The following is a summary of the comments made by the participants on the advantages and disadvantages of the use of repertory grids:

- (i) It facilitated reflection on teaching practice and philosophies;
- (ii) It would be difficult to use with teachers in schools, because of the considerable time it requires;
- (iii) They "provide a systematic way of examining a number of problems" and "are most successful in making us look at ourselves as teachers" (Teacher F);
- (iv) The idea of a model may have helped make the operation of the repertory grid more quickly understood;
- (v) The repertory grid "gave a practical insight into the relationship between theory and classroom practice" (Teacher G);
- (vi) "The ordering of one's thinking is quite difficult without some sort of structure such as that provided by the grids" (Teacher G);
- (vii) The use of the grids did cause some initial discomfort to the participants, but in most cases this was overcome;
- (viii) The use of bi-polar constructs forced consideration of alternatives;
- (ix) It "forces the development of a new discourse or language so that teachers can converse, and, hopefully, reach agreement...." (Teacher I);
- (x) The grids provide a means of uncovering the assumptions made regarding effective teaching and learning;
- (xi) "... the main points of one's thinking are succinctly revealed" (Teacher K);
- (xii) The grids "enables me to clearly relate theories back to my actual personal educational beliefs and practices" (Teacher K);
- (xiii) "The technique can become more important than the issues" (Teacher N);

- (xiv) There was concern whether the use of repertory grids "allowed us to get deeply enough into the issues as a group. It may have individually, but it would have been interesting to see how deep we would have gone as a group" (Teacher N);
- (xv) There were reservations about the application of repertory grids outside a "theoretical environment" (Teacher O);
- (xvi) "It is very easy to develop constructs which are markedly bi-polar in character, but ... this does not necessarily elicit subtle assumptions which we make in our teaching and learning" (Teacher Q);
- (xvii) The grids "continually re-channelled thinking around the elements and constructs elicited, and focused the discourse back on the purposes it was meant to serve" (Teacher R);
- (xviii) "It has given a set of beliefs as to what I see as fundamental to me and my teaching" (Teacher S);
- (xix) The grids provided a crucial tool for analysing literature;
- (xx) "The grid provides a visual/concrete picture which is not abstract" (Teacher S).

(h) Advantages and disadvantages of the focus class idea

Teacher D:

The idea of a focus class was important to me as a basis for the course. Although I was not teaching the class the whole time, it allowed me to be very involved with the class teacher (we both have similar beliefs regarding teaching and learning). My discussions with her about planning and organisation allowed us both to see more clearly our position with regard to child-centred learning. We questioned ourselves about how much we negotiate with the children regarding their learning and how much we involved parents in any new procedures we were introducing into the class. I believe this allowed for growth and development for us both with regard to our approaches to teaching and learning. The focus class was an

advantage when you had to consider some specific situations and practices with regard to a class rather than creating a hypothetical situation.

Teacher E:

We need an element, in this case the focus class, to reflect our ideas and theories on. It stops people in the field of teaching reflecting on the way they see as ideal and what does not ever happen in practice for them. This is where the 'system' needs to be more closely relating to practices.

Teacher F:

One wonders how meaningful much of this approach would have been without this personal point of reference. Unquestionably, it made the impacts and insights more dramatic, applying as they did in such a relevant, personal and even intimate way.

As difficult as it was at times to deal with the levels of abstraction covered by some of the readings, the focus class as a yard-stick was critical in ensuring that observations and findings made were somewhat near 'reality'. Besides "keeping our feet on the ground" in this way during group and personal deliberations, the focus class provided a "jumping off" point at times to provide another dimension to a discussion topic. Such 'concrete' experiences provided by the focus classes of the course members, by permeating our deliberations, made a significant contribution to the "applicability" of our conclusions.

Teacher G:

The idea of a focus class as a basis for a course in professional development is excellent, because it places the emphasis of the course on the real business of education, classroom teaching and learning. It was useful to identify one's approaches to teaching and learning with a given class in a particular learning environment. I had some difficulty at the beginning because my teaching these days is, regretfully, only with two groups of children for six periods each week. This means that it is not as easy to relate the discussions to the group of students as we would wish. However, this is a minor individual problem and the notion of a focus class is the best



attempt I have seen to make professional development courses a part of the classroom scene with a student-centred dimension.

Teacher H:

The idea of a focus class was excellent. Initially, I had another class in mind, but as the course and my own preferred model of teaching and learning moved towards a negotiated curriculum, the focus class I settled on was seen as particularly appropriate. I was able to reflect on the theory, and actually observe a particular teacher using a model that I began to see as my preferred one.

Teacher I:

Yes, very important! As teachers are basically concerned with teaching and learning, and as this occurs everyday in our various classes, then we need to focus on these classes. Constant images of students, and your reactions with them, come into your mind, and you constantly test the theories and ideas in this practical (but visualized) situation. Perhaps more pre-course time should be spent on clarifying the focus class so that it, as a reference point, becomes very fixed.

Teacher K:

This is a valuable idea as it prevents me from becoming embedded in theories, and brings one's reflections back to the level of what I am going to do to enhance the effectiveness of my teaching-learning situation, which I encounter daily, rather than on the plane of an all embracing educational philosophy to be "kept in the head", but not put into practice. Therefore, when a repertory grid is completed for a particular reading, one ends up with a set of guidelines for effective teaching and learning with your own focus class or classes.

Teacher M:

The focus class is a good idea as it helped me to further examine my teaching of it. As to whether it was sufficient for being the basis of a course in professional development, that depends on the emphasis put upon it, and in this course a low-key, although always present, approach was used.

Teacher N:

The focus class is .... in itself an excellent idea for a professional development course. However, at times I thought we got too far away from the focus class. This was due to the abstract nature of the readings.

Teacher O:

Essential to refer back to, most of the time, particularly when things seem a little cloudy. However, I feel as though my focus class was not entirely suited to the program. Therefore, a clearer idea as to the type of focus class that would be most appropriate for referencing would be a possible inclusion in course preliminary correspondence.

Teacher P:

It (the focus class) was the concrete reality which directed thinking when looking at abstract theory, and finally provides the critical reference point at the end of the program for the evaluation of progress.

Teacher Q:

The idea of a focus class is an excellent one. It removes this course from being theoretically-based to be applicable at the classroom level. Although I find many of my classes are similar (due to their vocational nature and possibly due to the fact that I choose the students at interview) the notion of a focus class helped me to clarify my thoughts, and also provided some guidelines which will be useful to help me assist new nurse educators in my programme.

Teacher R:

This, I think, is essential. I found difficulty with this until staffing information indicated a need for me to teach a class next year. Immediately, a clearer purpose emerged and I was able to relate how I would approach my teaching and what learning would be involved.

Teacher S:

The focus class requirement was excellent because where any areas of confusion arose when you

attempted the grid you would refer back to the class and it became much clearer.

The focus class made me thing specifically about how I adjust my

- (a) method;
- (b) content;
- (c) expectations

to a particular class. It, therefore, made me talk in specifics and not to generalize. It gave my thinking a human perspective - is not this what teaching is all about?

#### Summary of Comments

The participants indicated the following advantages and disadvantages of the idea of a focus class:

- (i) The idea of the focus class formed an important basis for the programme;
- (ii) The focus class was an advantage "when you had to consider some specific situations and practices with regard to a class, rather than creating a hypothetical situation" (Teacher D);
- (iii) "Unquestionably, it (the focus class) made the impacts and insights more dramatic, applying as they did in such a relevant, personal and even intimate way" (Teacher F);
- (iv) "As difficult as it was at times to deal with the levels of abstraction covered by some of the readings, the focus class, as a yard-stick, was critical in ensuring that observations and findings were made 'somewhat near reality'" (Teacher F);
- (v) "Such 'concrete' experiences provided by the focus classes of the course members, by permeating our deliberations, made a significant contribution to the 'applicability' of our conclusions" (Teacher F);

- (vi) "Constant images of students, and your reactions with them, come into your mind, and you constantly test theories and ideas in this practical (but visualized) situation" (Teacher I);
- (vii) In this programme "a low-key, although always present, approach was used" in emphasising the use of the focus class (Teacher M);
- (viii) A clear idea of the type of focus class most suitable to the programme may need to be given to participants prior to the commencement of the programme;
- (ix) "The focus class has made me think specifically about how I adjust my
  - (a) method,
  - (b) content, and
  - (c) expectations
 to a particular class" (Teacher S).

(i) Strengths and weaknesses of readings

Teacher D:

The course readings proved helpful after they were discussed and translated into plausible language. These readings allowed me to become aware that the various approaches to teaching and learning reflect various philosophical positions.

My position with regard to teaching and learning is mostly at the primary level, but as a result of the readings I have become aware that the secondary theories begin to reflect one another. For me the readings had to be read a couple of times before they made helpful meaning. This knowledge allowed me to negotiate with myself regarding my own value position concerning learning and teaching.

Teacher E:

Some of the course readings I found to be very worthwhile in that they alone stimulated ideas, and offered knowledge that could be built on and used. However, if we were not able to discuss the topic that paper dealt with, some of the ideas

that were needed to be dealt with would have been missed.

On a personal level I found the readings difficult to understand - perhaps because of the Greeco/Latin elements in the language!

Teacher F:

These exercises produced a feeling of fulfilment. The philosophical examination, mental exercise, heightened educational awareness, and the exposure to teaching and learning rationale, combined to provide a multi-dimensional stimulation for a teacher who felt that they had 'come in from the cold'. In our professional tune-up such comfortable bite sized bits were titillating aperitifs in our professional development menu, with the readings and the main course dish of repertory grids, although digestion took some time for some of the richer offerings. Eventually, one was left with a comfortably full feeling of satisfying contentment including surprisingly little indigestion.

Teacher G:

I found both the lecturer's synthesis of the authors quoted and exercises of summarising chapters from the readings, provided a valuable method of gaining a background for course discussions. I think all the groups appreciated not having to deal with masses of readings and texts that only remotely, or in parts, dealt with the focus of the question.

Teacher H:

The course readings were most intense, but through discussion within the group the wealth of knowledge, and richness of the material, became evident. However, without the group's support I may have found some of them difficult, to say the least. The group's effort in breaking them down into key issues, then constructs, was most helpful.

Teacher I:

At first glance, there were very heavy pieces of reading with no apparent usefulness. It took the group discussion and the repertory grids to help us get the necessary information from them. But, I must admit as I progressed in this technique

that I found the readings more enjoyable, and their meanings became more clear. As the meanings became clearer, I found that they were very closely related to teaching and learning and often expressed very important arguments currently being debated by teachers.

Teacher K:

My initial reaction to the first set of readings, which were sent to me prior to the course, was that they were far above the actual plane on which I was operating and I could not relate them back to the teaching and learning situation. However, once the course began and the group, with the help of the lecturer, began to discuss the readings, I was able to pick out the relevant points and break them down for my own use.

Might I suggest that pre-reading for the course perhaps be similar to the set of readings we were given in Week 3, (if this does not alter the continuity of the course) as these were related more to teaching and learning, in my opinion, than the initial set. However, this could be due to the fact that the course had given me some techniques in being able to read fairly complicated statements about educational philosophies, and be able to break them down sufficiently to relate back to classroom practice.

I would not change the readings as the issues embedded in them gave rise to much thought and discussion. Also one felt extremely challenged by them and satisfied to find that one could, when shown how, relate them back to terms which could be understood and dealt with.

Teacher M:

The readings provided were very helpful as they clarified the issues we were investigating and it was good to 'grapple' with the thoughts and words. However, I feel that further discussion of the ideas presented would have been beneficial.

Teacher N:

I found the readings difficult. The language used, and their relevance to teaching, are issues I cannot fully resolve.

I prefer to read material that has a more practical emphasis, and attempt to draw together common threads, underlying philosophies.

Without the lecturer input and interpretations of the readings, I could have missed many big issues. The key questions approach was a useful way of tackling the readings, and one that I will incorporate into my practice when necessary.

Teacher O:

A major critical part with me. I could not see any reason why the message in the readings had to have the written word in "language a la academia".

Teacher P:

Once again, the strength of the readings lies in two areas:

- (i) In developing skills in initial analysis of abstract theories and bringing these back to reality;
- (ii) Secondly, in developing a background knowledge in current theory of teaching and learning. This will enable, or enrich, my conversation in this regard.

Teacher Q:

The course readings did provide a basis for discussing educational issues. However, some of them I found quite heavy reading, and this tended to frustrate me greatly, initially. Some readings, for example on the negotiated curriculum, were developed by group discussion, and I know that I personally would not have found them enlightening without the group interaction.

Teacher R:

For me they formed a bridge. I have not grappled with this level of philosophy for some time, and found them too far removed from the realities of my world. The discipline of having to come to terms with them was of major value. Looking back now I see them as both relevant and thought-provoking and having a profound effect on the base from which I operate.

### Summary of comments

The following is a summary of the comments of the participants on the strengths and weaknesses of the readings developed for the programme;

- (i) The readings "allowed me to become aware that the various approaches to teaching and learning reflect various philosophical positions" (Teacher D);
- (ii) Some course readings were found to be very worthwhile in that they "stimulated ideas and knowledge that could be built on and used" (Teacher E);
- (iii) There were some difficulties at least initially, with some of the language used in the readings;
- (iv) Group discussions, and lecturer input, for the readings was very important;
- (v) "These exercises (recordings) produced a feeling of fulfilment. The philosophical examination, mental exercise, heightened educational awareness and the exposure to teaching and learning rationale combined to provide a multi-dimensional stimulation.." (Teacher F);
- (vi) The readings were very directly relevant and challenging, but intense;
- (vii) Further discussion of the ideas presented in the readings would have been helpful;
- (viii) The readings were helpful in "developing skills in critical analysis of abstract theories and bringing them back to reality" (Teacher P);
- (ix) The readings assisted in "developing a background knowledge in current theory of teaching and learning" (Teacher P).



(j) Approach taken to assessmentTeacher D:

Because the theme of the course was to lead people to question their own values and attitudes towards education, I believe the approach taken to assessment of the course was particularly appropriate because students were assessed from the aspect of where they had reached as an individual with regard to teaching and learning as it related to their focus class.

Perhaps another component of the assessment process could be one which allows the student to have an individual discussion with course leader allowing for questions relevant to the student's area of teaching, e.g. primary, secondary, tertiary.

Teacher E:

It is always very difficult to assess what people gain from a course/study in an area. I feel as long as the individual evaluates what they are doing and how they can use the knowledge/skills/understanding, a course is effective for the individual on a personal level. The journal is a way of encouraging the participants look at their own growth and where they can extend their professional views.

Teacher F:

Contextually appropriate, coherent and enlightened.

Teacher G:

The difficulty I had at the beginning of the course was to establish clearly in my mind how this related to the quality and quantity of what I was expected to present.

This is obviously a legacy of my experiences over the years with assessment requirements that have laid down exams, essays, oral components, etc. Once one comes to terms with the idea of a professional journal as the major assessment method, there is no difficulty in seeing this as a means of assessment. I presume that, if the journal was found to be inadequate at the end of the first or second weeks, counselling would be given so that improvement could be made.

Teacher H:

I would assume that participation with the groups and sub-groups, and observable behaviour and development during the course, would complement the assessment through the journal, and the application of the repertory grids. I think that all three aspects are relevant and all have contributed to my professional development. The collection of materials has made me reflect on what I do as a teacher, how I use my time, and how I support and help teachers to improve their teaching and learning. My conclusion of a major paper from the Curriculum Workshop is intended to give a background to what I have been doing in my school over a period of three years.

I believe the assessment procedure used in this course is more generally meaningful as it focuses on self-evaluation, rather than the ability to put together numerous theoretical papers.

Teacher I:

This was clearly stated at the beginning of the course, and stated aims have been faithfully carried out. However, I feel the real assessment has been a constant self-evaluation as no comment or statement has been made without further reflection and modification. The materials written have also helped in self-assessment as each final grid interpretation has a review and test of what was learned. Thus, it soon became obvious if you had completed enough work and at enough depth. This piece of writing now being completed also indicates the self-assessment program. How can you review a course if you have not learned anything or taken part at some depth in the various discussions?

Teacher K:

This appears to me to be an excellent approach as it means all work completed during the three weeks of the course, is taken into account rather than assessment being based upon the submission of professional papers or giving back of information during an examination. As much of our student assessment is continuous and based upon what is achieved in the classroom, this is only proper for teachers to undergo the same process. I am highly in favour of this approach and also see our Course Evaluation as an excellent way of summing up this course for ourselves as well as others.

Teacher M:

I can only agree with the approach taken to assessment as again it was 'tailor-made' for me. I question the value of the writing of long discourses for often they are never re-read unless one purports to be a writer and uses one's writings for further assistance. I communicate verbally most easily and I am pleased that the assessment did not concentrate on written work.

Teacher N:

The assessment approach is very realistic. There is a real appreciation of the workload of the course participants. The assessment approach encourages a direct relationship between the course and the assessment.

Teacher O:

Fine. The application of repertory grids does I feel, reflect how I as a student am thinking about the teaching and learning process and also how I am prepared to revue or even compromise my activities as an educator. The concept of a journal reflects the "on the job" component of the course. Combining both the repertory grid exercises and the professional journal to me is a fair method of assessment.

Teacher P:

The approach taken to the assessment of the course is consistent with the methods used in running the course. It is student-centred and reflects an interaction between the teacher and the learner. It pre-supposes that the purpose of the course is to enable the student to develop his or her skills and ideas in the areas of teaching and learning.

Teacher Q:

An assessment approach which forces me to critically evaluate my approaches to teaching and learning at this stage of my professional development, I feel is of great value. The professional journal does this, as does the repertory grid approach, and I feel this is therefore of benefit to myself and, hopefully, the midwifery programme.

Teacher R:

The individual nature of the assessment has allowed for a wide range of needs and interests to be met. The journal has been the public aspect of this, and as such is not only a visual outcome, but is also the beginnings of an on-going and increasingly useful tool.

Teacher S:

The assessing by course work, exercises, and the professional journal was different to approaches that I had previously experienced. Initially, I found it difficult to accept because not having assignments meant I did not really know how I was going in the "eyes of others". To have an assessment resting on an "unknown" is a difficult concept to initially accept because people in these courses are primarily completing qualifications and therefore are continually conscious of how they are going.

Once I "came to grips" with this, I found this style of assessment a real innovation. To actually be assessed on course work is refreshing and to incorporate the completing of a professional journal into this assessment meant that:

- (a) you had to become organised;
- (b) you readily knew where things were;
- (c) you were therefore more effective personally in your teaching and in your dealings with staff and the community.

The real bonus of this form of assessment is the legacy of the professional journal exercise and the fact that it is so very relevant. Thus, to me, this was of real personal worth, and although I am doing subjects to complete a qualification. I only choose subjects that I believe will be of professional benefit to me. This has been that.

Summary of Comments

The following is a summary of the comments made by participants on the approach taken to assessment for the Programme:

- (i) The "student-centred" approach to assessment was strongly supported;

- (ii) The use of the Professional Journal could have been supplemented with individual student discussions with the lecturer in charge;
- (iii) The assessment approach was "contextually appropriate, coherent and enlightened" (Teacher E);
- (iv) There were some difficulties for participants in knowing how the Professional Journal related to the quality and quantity of what was expected of them;
- (v) Assessment using the Journal is complemented by the observation by the lecturer of the development of participants during the programme;
- (vi) The assessment procedure used is "more generally meaningful as it focuses on self-evaluation.." (Teacher H);
- (vii) The materials written have also helped in self-assessment as each tend grid interpretation was a review and test of what was learned" (Teacher I);
- (viii) "As much of our student assessment is continuous and based on what is achieved in the classroom, this is only proper for teachers to undergo the same process" (Teacher K);
- (ix) Combining both the repertory grid exercises and the Journal was seen as a fair method of assessment;
- (x) The assessment approach "pre-supposes that the purpose of the course is to enable the student to develop his or her skills and ideas in the areas of teaching and learning" (Teacher P);

(k) Modifications for future classes

Teacher E:

Because of the number of people involved in the course, I would have benefited from a set tutorial type session prescribed within or around the weeks. Although it was possible to made contact

with you at other times, as usual when people go back to their 'other lives', we don't always follow up problems!

Teacher F:

The constraints of time created a limiting effect at various stages. A personal preference would be for some set private study time each day - perhaps of half an hour before starting the p.m. session (this gained from an 8.30 daily start). I think a number of people found it easier to keep up the buzz/momentum while still 'on site'. There seemed to be a desire for more time for 'writing up'/reflection/grid interpretation, and reflective counselling/commentary with the course leader.

This might facilitate some assessment "feed-back" as well as closer scrutiny/guidance of individual's progress mid-stream.

Teacher G:

As discussed at the end of the course, it would be helpful with a completely new concept such as repertory grids if the lecturer could provide several models for the class. This would not lock the group into a set of conclusions that were those of the lecturer, but would give one a helpful method of approach to refer to when one was having difficulty.

Teacher H:

I think a daily session at the end of the day (a period of 10 to 15 minutes) for recording and reflecting might also be useful. This was the technique employed at the workshops mentioned earlier. On the other hand, the intensity of the course may make this a little onerous.

Teacher I:

Maybe some consideration of the three week spacing - a regular space between the actual working weeks instead of a short and long space. The three working weeks are for me the best method as it permits time for reflection and, if necessary, further reading, and what is an important time to discuss with other teachers in the school setting. I find it most difficult to suggest modifications as it was a 'negotiated' course with a core curriculum. I could not negotiate for future

groups, and the core curriculum was more than adequate.

Teacher K:

I can suggest only two modifications, firstly I feel the groups established in the first week were broken a little too early when new ones were established in the second. Although I can see the reasons behind this, perhaps change of groups need only be necessary on one occasion rather than two.

Secondly, I feel there needed to be more opportunity for the small groups to feed back information into the whole class for further discussion.

Teacher M:

The stimulation of extended, original thought must be an unspoken (or stated) goal for any educator and this course certainly provided many opportunities for achieving that aim. Writing tends to slow down my thought processes due to the reduced speed of my writing.

Teacher N:

I would make the jump from practice to theory in smaller steps.

I see that the Repertory Grid Technique, as practiced, as being too academic for school use. The approach needs to be modified to make it more applicable to schools.

I thought there was much greater value in using the course as a model for professional development. However, I think a variety of approaches should be modeled.

I can see great benefit in focusing on the professional journal idea in more detail.

Teacher O:

I assume the mixture of the educational backgrounds of the participants was accidental. If possible it would be advantageous to plan to have representatives from the various sections of education in the course. I feel that it would then be possible for philosophies of each sector to be compared and discussed. This sharing and

comparing would contribute greatly to the achievement of course aims.

More opportunity for debate and interchange of thoughts and ideas would be useful.

One simple activity that would have helped me to understand and appreciate other participants in the course would be to give each participant an opportunity to give a brief "history/job" introduction to the group. Reference has already been made to the repertory grids and the readings.

Teacher P:

The only way I would modify the course would be to allow more time in the first week for group work. I felt rushed in the first week in group work, and felt that, before a valuable discourse had been developed, the groups were broken up. Perhaps in Module B the concept of the focus class could have been developed more and brought more into personal realities.

Teacher Q:

I cannot see ways of modifying the course. I thoroughly enjoyed the three weeks.

Teacher R:

The only modification I would suggest is that the first use of the grid be based on some kind of "K-Mart approach". Issues might be related to the advantages and disadvantages of supermarkets in regard to convenience, cost to shopper, range of goods available, exchange of goods, etc. Although the focus class was used as a non-threatening situation, until the group cohesiveness is settled, it can still be somewhat confusing as an instrument, and the threat situation is still evident via primary/secondary/tertiary levels of teacher's experience.

Teacher S:

- (i) People be made aware of how they are progressing.
- (ii) Some tutorial sessions should be held by the lecturer with the groups.
- (iii) More time for the written aspects.
- (iv) Greater discussion time would be useful but I appreciate the time constraints.



### Summary of comments

The modifications for future programmes, as suggested by the participants, are summarized as follows:

- (i) Some additional tutorial sessions may have been helpful;
- (ii) Time constraints had some limiting effects, such as on-time for individual study and writing;
- (iii) A model of a repertory grid, its analysis and interpretation, should be provided at the beginning of the course;
- (iv) Regularizing the periods of time between the three periods of the programme would seem to be beneficial;
- (v) The timing of changes in the membership of groups needs further consideration;
- (vi) The repertory grid approach may need to be modified to make it more appropriate for use by teachers in schools;
- (vii) A more detailed introduction of each member to the class may facilitate later discussions;
- (viii) Procedures for indicating participant progress during the course may need to be developed.

### (1) The likely long-term effects of the course Teacher D:

The long term effects of the course for me is that I will always question more fully the two points of view (bi-polar constructs) with regard to teaching and learning, e.g. education should be determined by childrens' needs/societies' needs.

I believe my discussions may have been too one-sided, and I failed to appreciate that others, particularly parents see education from their own experiences. My negotiation skills have developed further as a result of the course. I immediately began to question myself about, how far I had progressed with this approach to teaching and learning. Since completing the course I have had discussions with staff regarding negotiation

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skills which can be developed, thus allowing children and their parents to be more involved in the educational program of the school.

Teacher E:

At the moment I cannot say how this course will effect me in the long-term other than what I have already discussed in (iv), (v), (vi) and (vii). Hopefully, because I have gained a great deal from this course, I will be encouraged to go on and look at how I can professionally grow, and encourage others to do so.

Teacher G:

... the most important lasting effect of the course for me is the reminder that theory is of little value without a relationship with practice, and that education is essentially to do with children learning and being taught in a classroom.

Teacher H:

In both the short term and long term, I will be approaching developments in my school on very much more an individual basis, focusing on teaching and learning with teachers, to enable them to clarify, reflect and, hopefully, develop new teaching and learning skills. This is not to say that this would be separate from other developments, such as policy development. However, what I am saying is that, for me, this approach to teacher development has a great deal of merit. It has been very much a significant learning experience.

Teacher I:

- (a) The change in my ability to language my framework will also be important, and I shall use this skill in convincing others, or rather helping others to clarify their frameworks.
- (b) The positive way I can say that student-centred and negotiated curricula can be introduced and the benefits of these.
- (c) The ability to see how the other person is arguing will be of most benefit as it will enable me to converse with them, starting at some common point.
- (d) When reading future teaching/learning documents it will be most useful as I have become more critical of what I read. I can

pick out main points and relate these to my particular focus.

Teacher K:

The main long term effect is that I have decided that I want to change my teaching style, and, basically, with the help of my ideas crystallised by the repertory grid technique, I know what steps to take, and I now need to put these steps into practice in a methodical, organised way. In other words, begin to reduce the gap between my ideal of effective teaching and learning, and my actual classroom practice.

Secondly, I hope to be much more organised in my personal professional development by the keeping of the professional journal and through this method, hopefully be of assistance to others.

Teacher M:

Being a person who constantly tries to 'peep' into the future, the short-term and long-term effects are that I am more aware of the difficulties, complexities and intricacies of the curriculum, and will treat it so.

Teacher N:

The discussions during the course served as a likely springboard for clarifying my personal philosophy. Issues such as individual needs versus group needs, child-centred versus teacher-directed, were brought into clearer focus.

I have used this clarification as a stimulus for re-writing a personal philosophy statement. I feel more positive about this new statement, because of the clarifications mentioned, and because the course re-inforced my underlying assumptions about learning.

The course also brought into clear focus the staff development approach I use. I again feel more positive about the negotiation/sharing approach that I use.

I believe there is a need to look more closely at effective teaching approaches at - - school, and how they relate to realising our educational philosophy. This examination should focus on classroom management techniques, and specific teaching strategies. I have already attempted

this though a submission focusing on language approaches. This submission relied heavily on sharing ideas. One possible direction would be to examine clearly different team teaching approaches.

Teacher O:

I will look for ways within guidelines or limits to liberalise TAFE curriculum particularly as a curriculum developer. As a teacher and administrator I hope to explore the negotiation factor in a broader sense and I feel more confident in my ability to generate a negotiated environment. The course may have allayed some fears of taking the curriculum direction away from the experts to the stake holders.

Teacher P:

The course will have the following long-term effects:

- (i) Help my analysis of educational documents and changing educational theory. It has clarified my personal reality and will enable me to bring these back to it for reflective purposes.
- (ii) The course has clarified my position in the teaching-learning situation, and will strengthen my conversation in this area.

Teacher Q:

This course has provided me with a basis for my own future professional development. I can now see more paths, which I need to follow to further alter/improve our midwifery curriculum. I also need to consciously think about my own teaching strategies and evaluate these further. The professional journal will be an on-going facet of my professional life. This course has provided me with both the skills and the knowledge (and hopefully understanding) to go forward and improve my own approaches. It has also provided me with the language which I hope will help me develop more educational discussion with my colleagues and other teachers. It has taught me to pay more attention to the actual words used in discussion. I am also more critically aware when reading professional papers.

Teacher R:

These remain to be seen! Several dilemmas have been highlighted and my sense of satisfaction in my professional contribution to my school had been falling over the last 2 years. I have lost contact with my 'classroom orientation' and moved towards a management view. In this regard it is the course which has been instrumental in focusing on this and other issues. This re-focusing together with my classroom role next year has given me a new enthusiasm, and a better appreciation of what my staff is about at present. Knowing too that I will have to fit into their scheme of development rather than change it to suit myself has added challenge to the future.

Teacher S:

(i) I now realise that I am a child-centred teacher, who is primarily interested in how things occur. This will influence -

my style of teaching in the future;  
my relationship with others;  
my professional development thrust;  
my continually developing philosophy of education.

(ii) It has provided me with my own set of "personal reference books", which explain who I am, why I am who I am, and how I came to be at this point. Consequently, it provides the arrows to indicate the professional path I need to follow now.

(iii) It has given me confidence, because I now understand my educational rationale more fully. Thus I have a well thought out and substantiated basis from which to move.

(iv) It has given me a management and development tool, which allows one to work through a task in an intelligent and logical manner; knowing that outcomes are going to be achieved.

(v) Has shown me the power of group dynamics, and how group involvement can be a totally effective tool for development.

(vi) The course modelled what it taught, and this certainly has implications for me as a teacher in the future.



### Summary of comments

The following is a summary of the comments of participants on the likely long-term effects of the programme on them:

- (i) A greater awareness of alternative philosophical positions and practical approaches to teaching and learning;
- (ii) A greater concentration on the "skills of negotiation" of teachers in the development of curricula;
- (iii) Encouragement for long-term professional growth;
- (iv) An increased awareness of the need to relate theory to classroom practice;
- (v) An increased awareness to approach teacher development tasks through working with individual teachers, and of basing these developments on teaching and learning;
- (vi) An increase in skills in articulating the constructs being used to describe teaching and learning;
- (vii) A positive attitude to student-centred and student-negotiated curricula;
- (viii) An increased capacity to see the basis from which others are arguing in relation to teaching and learning;
- (ix) An increased critical capacity when reading literature on education;
- (x) A reduction in the gap between theories of effective teaching and learning and classroom practice;
- (xi) A greater awareness of the "difficulties, complexities and intricacies of the curriculum and will treat it so" (Teacher M);
- (xii) The clarification of personal educational philosophies;

- (xiii) A greater confidence to act in a "negotiated environment" (Teacher O);
- (xiv) The provision of the "management and development tool" of repertory grids "allows one to work through a task in an intelligent and logical manner" (Teacher S).

#### 5.4 EVALUATING THE EFFECTIVENESS OF THE TEACHER DEVELOPMENT PROGRAMME IN MEETING INDIVIDUAL AND GROUP PURPOSES

- (i) Relationship of participants' comments to individual and group purposes  
The purposes of the teacher development programme have been previously stated in the Introduction, section C, this study as:

##### A. Individual teacher purposes

These purposes are to develop each participants' capacities to (i) recognize and describe;

(ii) explore;

(iii) review;

(iv) revise and clarify

alternative frames of reference which they may use to describe effective teaching and learning.

##### B. Group purposes

These purposes are to develop each participants' capacities to (i) communicate;

(ii) share;

(iii) negotiate;

these frames of reference with other programme participants.

The summary of comments for each of the evaluation questions, except questions (b), (d) and (k), was then considered in relation to the above purposes. The responses to questions (b), (d) and (k) are considered in chapter 7. Each comment was

considered in relation to these purposes, and the purposes(s) which the comment supported identified. In some cases, the comment made was judged to support one purpose only, whilst in other cases a comment was judged to be supportive of several of the listed purposes. In these instances, where the comment did not fit with any of the listed purposes, the essence of this comment is stated in the tables of analysis of comments and purposes.

The completed analysis tables show, for each of the questions considered, the purposes which are supported by the various comments. For each purpose, a total of the supportive comments for this purpose has been computed, and is shown at the conclusion of the tables. These totals are an indication of the overall support of the programme, as perceived by the participants, for the various purposes of the programme.

(ii) Analysis of participants comments

Question	A Individual Purposes				B Group Purposes		
	1	2	3	4	1	2	3
(a)							
(i)	✓	✓	✓	✓			
(ii)					✓		
(iii)							
(iv)						✓	✓
(v)							
(vi)							
(vii)							
(viii)							
(ix)							
(c) (1)	✓	✓	✓	✓			
(ii)	✓	✓	✓	✓		✓	✓
(iii)					✓		
(iv)					✓		
(v)					✓	✓	✓
(vi)				✓	✓		
(vii)	✓	✓	✓	✓			
(viii)	✓	✓	✓	✓			
(ix)			✓				
(x)	✓	✓	✓	✓			
(xi)							
(xii)							
(xiii)	✓	✓	✓	✓			
(xiv)	✓	✓	✓	✓			
(xv)							
(xvi)					✓		✓
(xvii)	✓	✓	✓	✓	✓	✓	✓
(xviii)							
(xix)							
(xx)	✓	✓	✓	✓			
Cumulative Total	10	10	10	11	7	5	5

Question	A Individual Purposes				B Group Purposes		
	1	2	3	4	1	2	3
(e)							
(i)					✓	✓	✓
(ii)							✓
(iii)							
(iv)					✓	✓	✓
(v)					✓	✓	✓
(vi)	✓	✓	✓	✓	✓	✓	✓
(vii)					✓	✓	✓
(viii)				✓	✓	✓	✓
(ix)	✓	✓	✓	✓			
(x)					✓	✓	✓
(xi)	The three periods of one week are necessary						
(xii)					✓		
(xiii)					✓	✓	✓
(xiv)	✓	✓	✓	✓			
(xv)							
(f) (1)							
(ii)					✓	✓	✓
(iii)							
(iv)							
(v)					✓	✓	✓
(vi)	✓	✓	✓	✓			
(vii)	✓	✓	✓	✓			
(viii)							
(ix)							
(x)					✓	✓	✓
(xi)							
(xii)							
(xiii)							
(xiv)							
(xv)							
Cumulative Total	15	15	15	16	19	16	17

Question	A Individual Purposes				B Group Purposes		
	1	2	3	4	1	2	3
(g)							
(i)	✓	✓	✓	✓			
(ii)	Too much			time required			
(iii)							
(iv)	An initial			example for			
	necessary						
(v)							
(vi)							
(vii)	Some initial			discomfort			
	grids						
(viii)	✓	✓	✓	✓		✓	
(ix)							✓
(x)	✓	✓	✓	✓			
(xi)							
(xii)							
(xiii)	The techniques			of using			
	more important			than the			
	issue.						
(xiv)	The procedures			may not			
	lead to a depth of						
	thinking within			groups			
(xv)	The grid			techniques			
	may only operate			in a			
	"theoretical environment"						
(xvi)	The processes			may not			
	uncover subtle			assumptions			
	about teaching			and learning.			
(xvii)	✓	✓	✓	✓			
(xviii)							
(xix)	✓	✓	✓	✓			
(xx)							

to be of use in schools

operating the grid is

with the use of repertory

the grids could become

more important than the issue.

lead to a depth of

thinking within groups

only operate in a

"theoretical environment"

uncover subtle assumptions

about teaching and learning.

(h) (i)									
(ii)									
(iii)									
(iv)									
(v)									
(vi)									
(vii)									
(viii) Clear idea of type of focus class needs to be given									
(ix)									
Total	20	20	20	20	22	20	17	18	

Question	A Individual Purposes				B Group Purposes		
	1	2	3	4	1	2	3
(i)							
(i)							
(ii)							
(iii)							
(iv)	✓	✓	✓	✓			
(v)							
(i)(i)	✓	✓	✓	✓			
(ii)							
(iii)	Initial difficulties with the language of the readings						
(iv)					✓	✓	✓
(v)	✓	✓	✓	✓			
(vi)							
(vii)	Further discussion of ideas on the readings needed						
(viii)	✓	✓	✓	✓			
(ix)							
(j) (i)							
(ii)	Discussion of Professional Journal to programme expectations						
(iii)							
(iv)							
(v)							
(vi)							
(vii)			✓	✓			
(viii)							
(ix)	Combining repertory grid interpretations and the Professional Journal was fair.						
(x)							



question	A Individual Purposes				B Group Purposes		
	1	2	3	4	1	2	3
(m)							
(i)	✓	✓	✓	✓			
(ii)					✓	✓	✓
(iii)							
(iv)							
(v)							
(vi)	✓	✓	✓	✓			
(vii) Positive negotiated attitude to curricula							
(viii)					✓	✓	✓
(ix)	✓	✓	✓	✓			
(x)							
(xi)	✓	✓	✓	✓			
(xii)							
(xiii) A greater environment" confidence in a "negotiated							
(xiv)							
Total	27	27	28	29	23	20	21

student-centred and

The programme purposes, and the totals for their support, are as follows:

#### A. Individual purposes

Developing each participant's capacity to

(1)	recognize and describe;	27
(11)	explore;	27
(iii)	review;	28
(iv)	revise and clarify	29

alternative frames of reference which they may use to describe effective teaching and learning.

### B. Group purposes

Developing each participant's capacity to

- |       |              |    |
|-------|--------------|----|
| (i)   | communicate; | 23 |
| (ii)  | share;       | 20 |
| (iii) | negotiate    | 21 |

these frames of reference with other programme participants.

### (iii) Interpretation of this analysis

#### Individual purposes

All four purposes are very strongly supported by the comments of the participants. Thus, the teacher development programme was, on this basis, effective in assisting participants in developing capacities to recognize, describe, review, revise and clarify alternative frames of reference, which they may use in describing effective teaching and learning.

#### Group Purposes

These purposes are strongly supported, but slightly less so than the individual purposes. Nevertheless, the comments of the participants indicate that the programme was effective in developing their expertise to communicate, share and negotiate frames of reference for use in describing effective teaching and learning.

Thus thesis C1 is very strongly supported.

### (iv) Conclusions

The evaluation undertaken indicates strong support for thesis C1. That is, the participants considered the <sup>6</sup>técher development programme to be very effective

in meeting both the individual and group purposes of the programme.

## CHAPTER SIX

### EVALUATION OF THE EFFECTIVENESS OF THE PROGRAMME IN MEETING ITS GENERAL PURPOSES

- 6.1 Purpose of the chapter.
- 6.2 Outline of the case studies.
- 6.3 Selection of teachers for the case studies.
- 6.4 Case study A.
- 6.5 Case study B.
- 6.6 Case study C.
- 6.7 Evaluation of the effectiveness of the programme  
in meeting its general purposes.

### 6.1 Purpose of the chapter

This study is based on the development and conduct of a teacher development programme for a group of senior teachers. As described in chapter 4 of this study, at particular stages of their participation in this programme each teacher developed, analysed and interpreted a repertory grid based on descriptions of effective teaching and learning for their focus class. This chapter reports a detailed study of these analyses and interpretations as undertaken by each of three teachers. These three case studies use the repertory grid procedures developed in chapter 2, section 2.3, of this study to monitor and assess changes in the intelligibility of the descriptions of effective teaching and learning during the programme by these teachers. The effectiveness of this programme in enhancing descriptive intelligibility for each of the three participants is then considered.

### 6.2 Outline of case studies

The teacher development programme was conducted in three periods, each of one week in duration. At the end of each of these periods, each participating teacher completed a repertory grid on describing effective teaching and learning for their focus class. Correlation matrices for both elements and bi-polar statements (constructs) were completed. Each teacher analysed and interpreted these matrices, and the repertory grid, in terms of describing effective teaching and learning for their focus class. The three repertory grids considered in each of the case studies are designated as Repertory Grid 1, Repertory Grid 2 and Repertory Grid 3 in the order of their completion during the programme.

Each of the case studies will be reported as follows:

- (a) Summary of the qualifications and teaching experience of the teacher;
- (b) Brief description of the focus class;
- (c) Repertory Grid 1, including:
  - (i) Elements of the grid;
  - (ii) Bi-polar statements (constructs) of the grid;
  - (iii) The completed repertory grid;
  - (iv) Correlation matrices for elements and bi-polar statements;
  - (v) Calculation of co-efficients of consistency and plausibility;
  - (vi) Interpretation of correlation matrices coreferencing of elements and coefficients of consistency and plausibility;
- (d) Repertory Grid 2, including:
  - (i) Elements of the grid;
  - (ii) Bi-polar statements (constructs) of the grid;
  - (iii) The completed repertory grid;
  - (iv) Correlation matrices for elements and bi-polar statements;
  - (v) Calculation of the coefficients of consistency and plausibility;
  - (vi) Interpretation of correlation matrices, coreferencing of elements and coefficients of consistency and plausibility;
- (c) Repertory Grid 3, including:
  - (i) Elements of the grid;
  - (ii) Bi-polar statements (constructs) of the grid;
  - (iii) The completed repertory grid;
  - (iv) Correlation matrices for elements and bi-polar statements;
  - (v) Calculation of the coefficients of consistency and plausibility;

- (vi) Interpretation of correlation matrices, co-referencing of elements, and coefficients of consistency and plausibility.

(f) Discussion of the changes, throughout the programme, in the description of effective teaching and learning for the focus class, particularly as these relate to changes in the coefficients of consistency and plausibility, the co-referencing of elements, and to the teachers' interpretations of their repertory grids.

### 6.3 Selection of teachers for the case studies:

All sixteen (16) teachers, who began the programme, completed it. The following areas of education were represented by these teachers:

Technical and Further Education (including Nurse Education) (3 teachers)  
 Secondary Education (Grades 7-10) (8 teachers)  
 Primary Education (Grades K-6) (5 teachers)

For the case studies, one participant was selected from each of three areas. This selection was made on the basis that the approach to teacher development of this programme should be equally applicable to participants from any area of education and professional background, and that this applicability was best illustrated by selecting teachers from as wide a range of backgrounds, and current responsibilities, as possible. The three participants selected were from the three broad areas of education represented in the programme-primary, secondary and further education. The primary teacher is a vice-principal of a large primary school in a predominantly economically, and socially, deprived area. The secondary teacher is a

senior master in a large district high school in a relatively prosperous and educationally conscious, rural area, and the further education representative is a senior nurse educator in a large metropolitan hospital.

#### 6.4 Case Study A (Secondary Education)

##### (i) Background and experience of the teacher

This teacher is a Senior Master of English and Social Sciences in a large District High School. Twelve years of teaching have been completed, with the last four in the above Senior Master position. An initial period of four years of training included the completion of the degree of Bachelor of Arts and a Diploma of Education. An emerging interest, and strengthening influence for this teacher, is the teaching of English, and particularly reading, to primary school children.

##### (ii) Description of focus class

The class selected was a grade 9 English class at the above District High School. The class had an enrolment of 24 students, including three students, who lacked motivation, and one of whom was a severe behaviour problem. The remaining students were very highly motivated. The class included a mixture of average and above-average ability students.

##### (iii) Repertory Grid 1

This grid, and its analysis and interpretation, was completed at the end of the first week of the teacher development programme.

- (a) Elements of the grid: The elements developed by the teacher were as follows:



Element	Statement of Element
A	Good teaching provides students with the opportunity to measure their progress.
B	Good teaching involves individual and group work equally.
C	Good teaching involves communicating in a manner suitable for the maturity level of the child.
D	Good teaching involves negotiation of the curriculum with the students.
E	Good teaching encourages the development of self-motivation.
F	Good teaching draws in a wide range of experiences and resources.

(b) Constructs (Bi-polar statements)

Using the triad method, the following bi-polar statements were elicited from the above set of elements.

Construct	Initial Pole	Emergent Pole
1.	Learners should be assured of success.	Learners should be able to cope with failure.
2.	Learning relies on student motivation.	Learner relies on teacher motivation.
3.	Learning best occurs when the curriculum is inter-related.	Learning best occurs when the curriculum is subject-oriented.
4.	Students learn best when the teaching method is negotiated.	Students learn best when the teaching method is determined for them.

5. Learning occurs best when student interests and needs are met. Learning occurs best when society's needs are met.
6. A rich learning environment results when a wide range of resources are utilised. A rich learning environment is teacher dependent.

(c) Completion of the repertory grid

Using the procedure described in section 2.3 of chapter 2, the repertory grid was completed as follows:

Repertory Grid 1

Construct	Elements						Construct
Initial Pole	A	B	C	D	E	F	Emergent Pole
C1P1	✓	✓	✓	✓	✓	✓	C1P2
C2P1	✓	✓	X	✓	✓	✓	C2P2
C3P1	✓	✓	✓	✓	✓	✓	C3P2
C4P1	✓	X	✓	✓	✓	✓	C4P2
C5P1	✓	X	✓	✓	✓	✓	C5P2
C6P1	✓	✓	✓	✓	✓	✓	C6P2

(d) Correlation matrices for elements and constructs

Using the procedures described in section 2.3 of chapter 3, the correlation matrices for both the elements and the constructs were completed.

(i) Correlation matrix for elements

Elements	A	B	C	D	E	F
A		4	5	6	6	6
B			3	4	4	4
C				5	5	5
D					6	6
E						6
F						

(ii) Correlation matrix for constructs

Construct	1	2	3	4	5	6
1		5	6	5	5	6
2			5	4	4	5
3				5	5	6
4					6	5
5						5
6						

(e) Calculation of coefficients of Consistency and plausibility

These are calculated as described in chapter 2, section 2.3:

(i) Coefficient of consistency

For a repertory grid of n elements and m bipolar statements

$$\text{Coeff. of consistency} = \frac{2(\text{sum of element corr. scores})}{mn(n-1)}$$

In this case n = 6 and m = 6, and the sum of the element correlation scores is 75.

Hence coefficient of consistency =  $\frac{2 \times 75}{6^2 (6-1)}$   
 =  $\underline{0.83}$

(ii) Coefficient of Plausibility

Coefficient of plausibility

=  $\frac{\text{Sum of adjusted construct corr. score from median score} \times (\text{Number of pairs of constructs} \times \text{max. difference score})}{\text{max. difference score}}$

For a grid with 6 elements the median construct correlation score is 3. If the correlation scores are adjusted to differences from this median score, the adjusted correlation matrix is as follows:

Construct	1	2	3	4	5	6
1		2	3	2	2	3
2			2	1	1	2
3				2	2	3
4					3	2
5						2
6						

Hence the sum of the adjusted scores = 32

The number of pairs of constructs = 15

The maximum difference of scores from the median score(s) = 2

Therefore, the coefficient of plausibility =  $\frac{32}{15 \times 2}$

= 0.71

(f) Interpretation of the repertory grid and the correlation matrices

(i) Coherence of elements

The elements of the repertory grid give a description of effective teaching and learning for the focus class of the participant. As discussed

in chapter 1, section 1.3, the coherence of such a set of statements may be considered in terms of the co-referencing of the constituent semantic units of the description; that is in terms of the elements of the description. If explicit co-referencing occurs, the referents of each element should coincide with the referents of at least one other element.

For the above grid, the referents contained within the various elements are as follows:-

Element	First referent	Second referent
A	Student(s)	Progress
B	Individuals and groups	Work
C	Manner of communicating	Maturity level of child
D	Curriculum	Students
E	Self (student)	Motivation
F	Experiences and resources	Range

All elements, except F, contain a reference to students. Hence, elements A to E can be linked through their reference to students. They each describe conditions supporting a student-centred approach to teaching and learning. By referring to groups, as well as individuals, and suggesting equal individual and group work, element B specifies a condition only partly supportive of a student-centred approach. Elements A, C, D and E would be expected, therefore, to correlate strongly. Element B would be expected to correlate less strongly with this set of elements.

An examination of the correlation matrix for the elements shows that the correlation scores are lower for element B than any other element.

By discussing the correlation scores, the teacher concerned made the following comments:

Correlating elements	Correlation score	Teacher's comments
A and D	6/6	This emphasises that a negotiated learning environment will enable rapid student progress.
A and E	6/6	This emphasises that the more self-motivated the student the greater the progress.
D and E	6/6	A negotiated curriculum results in highly self-motivated students.

These comments suggest firstly, that effective teaching and learning is being perceived by the teacher as student-centred. Secondly, a negotiated learning environment is linked with student progress, which, in turn, is linked with student self-motivation, which is seen to result from a negotiated curriculum. Thus a negotiated learning environment, student progress, negotiated curricula and student self-motivation are explicitly co-referenced. In terms of co-referencing, elements A, D and E form, for the teacher, a highly consistent description of effective teaching and learning.

Element F refers to the provision of a wide range of resources and experiences. As resources and experiences are not referred to in any other elements, element F does not explicitly co-refer to any other elements. The correlation matrix indicates, however, that it is highly correlated (correlation score of 6/6) with elements A, D and E. The teacher concerned made the following comments on these high correlations:

Correlating elements	Correlation score	Teacher's comments
A and F	6/6	This emphasises that the wider the range of experiences the greater the student progress.
D and F	6/6	A negotiated curriculum will result in a greater range of experiences for the learner.
E and F	6/6	A wide range of experiences will result in the self-motivation of the students.

These comments suggest that the teacher perceives the provision of a wide range of experiences as being linked to student progress, negotiated curricula and student self-motivation. These links of A, D and E with F are, for the teacher, implicit within the description of effective teaching and learning given by the elements of the grid. Thus elements A, D and E are coherent in terms of explicit co-referencing with one another and all are coherent, implicitly with element F. Element C, which has correlation scores of 5/6 with each of elements A, D, E and F, co-refers

explicitly to A, D and E through its reference to the child or student. Although the teacher did not comment on the high correlations of elements C and F a link between the provision of "a wide range of experiences and resources" and "communicating in a manner suitable to the maturity level of the child" would seem to have been assumed.

Elements B and C have a low correlation score (3/6). This would appear to result from a conflict between communicating according to the maturity level of the child, and students working in groups. Whilst the notion of group work conflicts with all other elements of the grid, this conflict is highlighted by reference to maturity levels suitable for individual children.

Thus

- (i) elements A, D and E show explicit co-reference;
- (ii) element F is implicitly related to elements A, D and E;
- (iii) element C co-refers, implicitly, to elements A, D and E, but at a lower level;
- (iv) element B has a low degree of correlation with the other elements.

#### (ii) Coefficient of consistency

These co-efficients indicate the overall degree of correlation between elements within a grid. This degree of correlation is a measure of the consistency of the elements in describing effective teaching and learning. The procedures



for calculating these co-efficients are described in chapter 2, section 2.4, of this study.

The coefficients of consistency for the various groups of elements considered above in (i) to (iv) are:

- (i) A, D and E            1.0
- (ii) A, D, E and F        1.0
- (iii) A, C, D, E and F    0.93
- (iv) A, B, C, D, E and F 0.83

The high degree of consistency of the elements of this grid, and the explicit co-referencing between elements A, D and E, suggest a highly coherent description of effective teaching and learning using these elements. The inclusion of element F, which correlates implicitly with elements A, D and E gives a group of elements, which give a fully consistent description of effective teaching and learning.

(ii) Plausibility of descriptions of effective teaching and learning

The pairs of constructs with high (6/6) correlation scores are:

- constructs 1 and 3
- constructs 1 and 6
- constructs 3 and 6
- constructs 4 and 5

Constructs 1, 3 and 6 can be considered as a group. An examination of the completed repertory grid shows that the correlation of constructs 1, 3 and 6 is between their initial poles. Hence the description of effective teaching and learning, given by the elements of the grid, has been interpreted to mean, in part, that -

Learners should be assured of success (Initial pole, Construct 1).

Learning best occurs when the curriculum is inter-related (Initial pole, Construct 2).

A rich learning environment results when a wide range of resources is utilized. (Initial pole, Construct 6)

Similarly, the high correlation of constructs 4 and 5 refers to the initial poles of these constructs. These are:

Students learn best when the teaching method is negotiated (Initial pole, Construct 4).

Learning occurs best when student interests and needs are met (Initial pole, Construct 5).

A further examination of the repertory grid reveals that the sets of constructs 1, 3 and 6, and constructs 4 and 5, do not correlate perfectly because of their different matchings with element B. Whereas element B is matched with the initial poles of constructs 1, 3 and 6, it is matched with the emergent poles of constructs 4 and 5. It is this latter matching which has substantially reduced the correlation of the constructs.

"Good teaching involves individual and group work equally."

is matched with -

"Students learn best when the teaching method is determined for them", and

"Learning occurs best when society's needs are met."

That is, equating individual and group work has been interpreted by the teacher to mean that the teaching method must be determined by the teacher, and that the curriculum should be based upon the needs of society. Both interpretations indicate reservations, by the teacher, in supporting a student-centred approach to teaching and learning. These same reservations were revealed in the discussion of the correlation matrix for the elements.

In addition, element C has been matched with the emergent pole of construct 2. That is, "Good teaching involves communicating in a manner suitable for the maturity level for the child" is matched with "Learning relies on teacher motivation".

This matching may indicate, again, the teachers reluctance to relinquish a view of teaching in which student learning is teacher motivated and directed. If element B is eliminated for the repertory grid then the plausibility coefficient becomes 0.83.

If elements B and C are eliminated, the plausibility coefficient is 1.0. These coefficients reflect the comments made above. Thus the most plausible description results from a grid containing elements A, D, E and F.

In summary, by including element B, and to a lesser extent element C, there is a loss in the coherence of the description of effective teaching and learning provided by the elements of the grid, and a substantial loss in the plausibility of the

description based on these elements. This analysis may also indicate, as discussed above, difficulties for the teacher in describing a student-centred approach to teaching and learning.

#### 4. Repertory Grid 2

This grid, and its analysis and interpretation, was completed at the end of the second week of the teacher development programme.

##### (a) Elements of the grid

<u>Element</u>	<u>Statement of Element</u>
A	Effective learning/teaching best occurs when the curriculum is negotiated.
B	Effective learning/teaching best occurs when teachers are aware of individual student capabilities and social backgrounds.
C	Effective learning/teaching best occurs when students are self-motivated.
D	Effective learning/teaching best occurs when the teacher is a facilitator.
E	Effective learning/teaching best occurs when a wide range of resources are drawn on.
F	Effective learning/teaching best occurs when short term goals are present.
G	Effective teaching/learning occurs when individualised assessment occurs.
H	Effective teaching/learning involves communicating in a manner suitable to the stage of the child.
I	Effective learning requires a secure environment.
J	Learning occurs best when the curriculum is inter-related.

(b) Constructs (Bi-polar statements)

Using the triad method, the following bi-polar statements were elicited from the above set of elements.

Construct	Initial Pole	Emergent Pole
1	A negotiated curriculum caters for individual student needs and capabilities.	Consideration of the students' background allows appropriate student learning.
2	The "teacher-facilitator" ensures that students learn as individuals.	The teacher as expert emphasises content.
3	Self-motivated students require a wide range of resources	Self-motivated students use the teacher as facilitator.
4	To achieve short term goals a range of resources is required.	Individualized assessment requires short term goals.
5	Individualised assessment considers the stage the child is at.	Short-term goals allows the child to move stages more quickly.
6	A secure environment facilitates the child's development.	A child's education is based on communication.
7	An inter-related curriculum provides a secure environment.	Communication provides a secure environment.

(c) Completion of the repertory grid

The repertory grid was completed using the procedures described in chapter 2.

## Repertory Grid 2

Construct	Elements										Construct
Initial Pole	A	B	C	D	E	F	G	H	I	J	Emergent Pole
C1P1	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	C1P2
C2P1	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	C2P2
C3P1	✓	✓	X	X	✓	✓	X	X	X	✓	C3P2
C4P1	X	✓	✓	✓	✓	X	✓	✓	✓	X	C4P2
C5P1	X	✓	X	X	X	✓	✓	✓	✓	X	C5P2
C6P1	X	✓	✓	✓	X	✓	✓	X	✓	✓	C6P2
C7P1	✓	X	✓	✓	✓	✓	✓	X	✓	✓	C7P2

(d) Correlation matrices for elements and constructs

Using the procedures described in Chapter 1, section 2.4, correlation matrices for both elements and constructs were completed.

(i) Correlation matrix for elements

[illegible]

(ii) Correlation matrix for constructs

Construct	1	2	3	4	5	6	7
1		8	4	5	3	6	9
2			4	5	5	6	7
3				5	3	4	5
4					4	5	4
5						5	2
6							7

(e) Calculation of coefficients of coherence and plausibility

These are calculated as described in chapter 2.

(i) Coefficient of consistency

For a repertory grid of n elements and m constructs, the coefficient of consistency

$$= \frac{2 (\text{Sum of element-correlation scores})}{mn(n-1)}$$

$$= \frac{2 \times 186}{7 \times 10 \times 9}$$

$$= 0.59$$

Hence the coefficient of consistency is 0.59.

(ii) Coefficient of plausibility

The coefficient of plausibility

$$= \frac{\text{Sum adj. const corr.scores from median scores}}{\text{No. pairs constructs} \times \text{Max.diff.score from median score(s)}}$$

For a grid with ten (10) elements the median construct correlation scores is 5, and the maximum difference of these scores from the medians is 5.

If the construct correlation scores are adjusted to differences from these medians, then the correlation matrix is as follows:

Construct	1	2	3	4	5	6	7
1		3	1	0	2	1	4
2			1	0	0	1	2
3				0	2	1	0
4					1	0	1
5						0	3
6							2

Hence sum of adjusted correlation scores = 25

The number of pairs of constructs = 21

The maximum difference of construct correlation scores from the median scores = 5

Therefore, the coefficient of plausibility =  $\frac{25}{21 \times 5}$   
 = 0.24

The co-efficient of plausibility is 0.24

(j) Interpretation of the correlation matrices

(i) Correlation of elements

The referents included in the elements are as follows:



<u>Elements</u>	<u>Referents</u>
A Curriculum	
B Teachers	Industrial student Social backgrounds
C Students	Self-motivation -
D Teacher	Facilitator -
E Resources	-
F Goals	
G Individualized assessment	
H Community- cating	Stage of the child
I Environment	
J Curriculum	

Given these referents, only limited explicit co-referencing can occur between the elements. In particular, elements E, F, G and I each have single referents, which are not included in the referents for any other element. Explicit co-referencing occurs between

Elements A and J

and Elements B, C, D and H

The correlation scores for the possible pairs of elements drawn from these two sets of elements are:

<u>Pair of elements</u>	<u>Correlation score</u> (Maximum 10)
A,J	4
B,C	3
B,D	3
B,H	4
C,D	7
C,H	4
D,H	4

Of these, only elements C and D show a high correlation. Thus "Effective learning/teaching best occurs when students are self-motivated" is highly correlated with "Effective learning/teaching best occurs when the teacher is a facilitator". That is, the self-motivation of students is associated, implicitly, with the teacher facilitating, rather than motivating, student learning.

Elements G and I also have a maximum correlation score of 7. That is, "Effective learning/teaching occurs when individualized assessment occurs" is linked with "Effective learning requires a secure environment". This is an implicit link, the implication being that there is a necessary relationship between "individualized assessment" and a "secure environment". Both pairs of elements A and E, and A and F have correlation scores of 6. Thus "Effective learning best occurs when the curriculum is negotiated" may be implicitly related to "Effective learning/teaching best occurs when a wide range of resources are drawn on" and "Effective learning/teaching best occurs when short-term goals are present".

Hence there is an implied link between "negotiating" the curriculum, a "wide range" of resources and "short-term" goals. What seems to be suggested by this link is that an essential requirement for effective teaching and learning, when the curriculum is negotiated with students, is that short-term goals are negotiated and fixed. When this is done, the more individualized nature of the curriculum being taught, to allow these short-term goals to be met, will require the provision of a wide range of resources.

If the repertory grid is restricted to elements C, D, G and I

then the coefficient of consistency = 0.83.  
and the coefficient of plausibility = 0.62

An inspection of the correlation matrix shows that the correlation scores for element B are less than, or equal to, 3. If element B is eliminated from the grid then the  
coefficient of consistency = 0.63  
and the coefficient of plausibility = 0.32

If, in addition to this, element H is removed from the grid, as it has low correlation scores, then the coefficient of consistency = 0.64  
and the coefficient of plausibility = 0.36

Thus the removal of elements B and H from the grid changes the coefficients of consistency and plausibility only marginally (by 0.05 and 0.12, respectively). Only the grid containing elements C, D, G and I has higher coefficients of consistency (0.84) and plausibility (0.62). These

compare with 0.59 and 0.24 respectively for repertory grid 1.

Repertory grid 2 has ten (10) elements. A core set of elements, C, D, G and I, is highly consistent, whilst the full grid has very low consistency and plausibility, and limited co-referencing. This indicates that the elements, other than C, D, G and I, do not assist in giving a coherent and plausible description of effective teaching and learning. These elements have introduced additional factors, such as short-term goals and a secure environment, which the teacher is unable to integrate into an intelligible description of effective teaching and learning at this stage of the programme. That is, the programme has raised the teachers' awareness of these factors, but the teacher has not been able to inter-relate them, with the core elements C, D, G and I of the grid, intelligibly.

(ii) Plausibility of constructs

An examination of the repertory grid, and the adjusted correlation matrix for constructs, indicates that the following pairs of construct poles are highly correlated:

<u>Pairs of construct poles</u>	<u>Correlation score</u>
C1P1 - C7P1	9
C1P2 - C7P2	9
C5P2 - C7P1	2
C5P1 - C7P2	2
C1P1 - C2P1	8
C1P2 - C2P2	8
C1P2 - C5P1	3
C1P1 - C5P2	3
C3P1 - C5P2	3
C3P2 - C5P1	3

These constructs can be linked, using the above pairings, to form the following sets of linked statements:

- (a) C2P1 - C1P1 - C7P1 - C5P2 - C3P1
- (b) C2P2 - C1P2 - C7P2 - C5P1 - C3P2

Set (a) forms the initial poles and set (b) the emergent poles of a revised repertory grid.

Furthermore, constructs 4 and 6 would not be included in this grid as their poles do not discriminate the meanings of the elements of the original repertory grid. The revised constructs are:

Revised set of constructs

Construct Pole	Initial Pole	Emergent Pole	Construct Pole
C2P1	The "teacher facilitator" ensures that students learn as individuals.	The teacher as expert emphasises content.	C2P2
C1P1	A negotiated curriculum caters for individual student needs and capabilities.	Consideration of the students' background allows appropriate student learning.	C1P2
C7P1	An inter-related curriculum provides a secure environment.	Communication provides a secure environment.	C7P2
C5P2	Short-term goals allows the child to move stages more quickly.	Individualized assessment considers the stage the child is at.	C5P1
C3P1	Self-motivated students require a wide range of resources.	Self-motivated students use the teacher as facilitator.	C3P2

For the teacher, these two sets of statements represent two contrasting interpretations of effective teaching and learning. The teacher would interpret the description of effective teaching and learning, given as elements of the repertory grid, as meaning the statements of the initial poles of the revised set of constructs.

If this revised set of constructs is used with elements C, D, G and I, as argued in the preceding section, the repertory grid is as follows:

Revised repertory grid

Construct	Elements					Construct
Initial Pole	C	D	G	I	Emergent Pole	
C2P1					C2P2	
C1P1					C1P2	
C7P1					C7P2	
C5P2					C5P1	
C3P2					C3P1	

Correlation matrix for elements

Elements	C	D	G	I
C		5	4	4
D			4	4
G				4
I				

$$\begin{aligned} \text{Coefficient of consistency} &= \frac{2 \times 5}{6 \times 5} \\ &= 0.83 \end{aligned}$$

Correlation matrix for constructs

Construct	1	2	3	4	5
C2P1		5	4	4	5
C1P1			5	4	5
C7P1				4	5
C5P2					4
C3P2					

The median construct scores are 2 and 3, and hence the adjusted construct correlation matrix is as follows:

Adjusted construct correlation matrix

Construct	C2P1	C1P1	C7P1	C5P2	C3P2
C2P1		2	1	1	2
C1P1			2	1	2
C7P1				1	2
C5P2					1
C3P2					

Coefficient of plausibility =  $\frac{15}{10 \times 2}$   
= 0.75

The adjustment of the constructs, as above, has increased the plausibility of the description provided by elements C, D, G and I from 0.62 to 0.75. Thus, the most consistent and plausible description of effective teaching available from repertory grid 2 is given by the revised grid:

	C	D	G	I
C2P1				C2P2
C1P1				C1P2
C7P1				C7P2
C5P2				C5P1
C3P2				C3P1

5. Repertory Grid 3

This grid, and its analysis and interpretation, was completed at the end of the final week of the teacher development programme.



(a) Elements of the gridElement      Statement of Element

- A      The role of language is crucial in achieving effective learning.
- B      The curriculum should be process-oriented to enable effective teaching and learning.
- C      Effective teaching and learning should emanate from a core curriculum.
- D      Effective teaching and learning involves a holistic view of the child's education.
- E      Effective learning and teaching involves student input.
- F      Assessment is an integral part of individualized curriculum.
- G      Effective teaching and learning occurs when the child, rather than the teacher, is the centre of the learning process.
- H      Effective learning and teaching occurs when there is a negotiated view of the world.

(b) Constructs (Bi-polar statements)

Using the triad method, the following set of bi-polar statements were elicited from the above set of elements.

<u>Construct</u>	<u>Initial Pole</u>	<u>Emergent Pole</u>
1	Language must be plausible.	Knowledge speaks for itself.
2	A curriculum should emphasise experiences.	A curriculum should emphasise outcomes.
3	Effective teaching and learning will be based on agreed upon values.	Effective teaching and learning will be subject based.
4	Effective teaching and learning needs to be coherent and contextual.	Effective teaching and learning needs to be consistent and universal.
5	Effective teaching and learning occurs when there is student input.	Effective teaching and learning occurs when learning is prescriptive.
6	Assessment should be individualised.	Assessment should be standardized.
7	Teaching should be child-centred.	The teacher directs the learning.
8	Effective learning and teaching occurs when there is a negotiated view of the world.	Effective learning and teaching occurs when the view of the world is set.

(c) Completion of the repertory grid

The repertory grid was completed using the procedures detailed in Chapter 2, Section 2.4.

Repertory Grid 3

Construct		Elements								Construct	
Initial Pole		A	B	C	D	E	F	G	H	Emergent Pole	
C1P1		✓	✓	X	✓	✓	✓	✓	✓	C1P2	
C2P1		✓	✓	✓	✓	✓	✓	✓	✓	C2P2	
C3P1		✓	✓	✓	✓	✓	✓	✓	✓	C3P2	
C4P1		✓	✓	✓	✓	✓	✓	✓	✓	C4P2	
C5P1		✓	✓	X	✓	✓	✓	✓	✓	C5P2	
C6P1		✓	✓	X	✓	✓	✓	✓	✓	C6P2	
C7P1		✓	✓	X	✓	✓	✓	✓	✓	C7P2	
C8P1		✓	✓	X	✓	✓	✓	✓	✓	C8P2	

(d) Correlation matrices for elements and constructs

Using the procedures described in Chapter 2, section 2.4, correlation matrices for both elements and constructs were completed.

(i) Correlation matrix for elements

Elements	A	B	C	D	E	F	G	H
A		8	3	8	8	8	8	8
B			3	8	8	8	8	8
C				3	3	3	3	3
D					8	8	8	8
E						8	8	8
F							8	8
G								8
H								

(ii) Correlation matrix for constructs

Construct	1	2	3	4	5	6	7	8
1		7	7	7	8	8	8	8
2			8	8	7	7	7	7
3				8	7	7	7	7
4					7	7	7	7
5						8	8	8
6							8	8
7								8
8								

(e) Calculation of coefficients of consistency and plausibility

(i) Coefficient of consistency

For a repertory grid of n elements the coefficient of consistency

$$= \frac{2(\text{sum of element correlation scores})}{n^2(n-1)}$$

$$= \frac{2(189)}{8^2(8-1)}$$

$$= 0.84$$

Hence the coefficient of consistency is 0.84

(ii) Co-efficient of plausibility

The coefficient of plausibility

$$= \frac{\text{sum of adjusted construct correlation scores from the median score(s)}}{\text{Number of pairs of constructs} \times \text{Maximum difference of construct correlation score from median score(s)}}$$

For a grid with eight (8) elements the median construct correlation scores is 4, and the maximum difference of these scores from the median is 4.

If the construct correlation scores are adjusted to differences from these medians then the correlation matrix is as follows:

Construct	1	2	3	4	5	6	7	8
1		3	3	3	4	4	4	4
2			4	4	3	3	3	3
3				4	3	3	3	3
4					3	3	3	3
5						4	4	4
6							4	4
7								4

Hence the sum of the adjusted correlation scores  
= 97

The number of pairs of constructs = 28

The maximum difference of the construct correlation scores from the median scores(s) = 4

The coefficient of plausibility is 0.86.

If element C is eliminated from the grid, because of its low correlation, the coefficient of consistency is 1.0 and the coefficient of plausibility is 1.0. That is, the grid consisting of elements A,B,D,E,F,G and H is fully consistent and plausible. This indicates that the notion of core curriculum, as in element C, is neither consistent or plausible with the other elements of the grid.

(f) Changes in the intelligibility of descriptions of effective teaching and learning

The changes in the co-efficients of consistency and plausibility throughout the programme may be summarized as follows:

Grid Number	1	2	Adjusted 2	3	Adjusted 3
Coefficient of consistency	0.83	0.59	0.83	0.84	1.0
Coefficient of plausibility	0.57	0.24	0.75	0.86	1.0

As previously discussed, the decrease in both consistency and plausibility from grid 1 to grid 2 may indicate that the teacher was, although aware of an increase in possible ways of describing effective teaching and learning, unable to accommodate these into a coherent set of elements. The co-efficients for adjusted grid 2 support this suggestion, and indicate the retention of core factors by the teacher in describing effective teaching and learning.

The wider range of referents used in the elements of grid 3, and, in particular, the higher coefficient of plausibility, indicates that the teacher has been able to accommodate an increased range of educational perspectives in the description of effective teaching and learning. The high correlation of the constructs for grid 3, as indicated by the high coefficient of plausibility, shows that the description given by the elements can be plausibly interpreted in terms of the constructs. This description is highly consistent and plausible, and hence intelligible. The one factor not to be intelligibly accommodated appears to be the notion of a core curriculum.

The changes in the above coefficients throughout the programme indicate that the intelligibility of the description of effective teaching and learning given by the teacher has increased during the

programme, not in terms of its consistency, but in terms of its plausibility. This appears to indicate that, in providing the teacher with a wide range of educational perspectives, the programme has not changed the logical consistency of the descriptions given, but has increased the teacher's capacity to give plausible interpretations of these descriptions. That is, a core of factors for describing effective teaching and learning has been retained by the teacher, but these factors may now be given more plausible interpretations.

#### 6.5 Case study B (Further Education)

##### 1. Background and experience of the teacher

This participant is a senior nurse educator responsible for a post-certificate course in midwifery at a large, public hospital. She has extensive experience as a nurse educator, and has completed some studies towards the degree of Master of Educational Studies. She has considerable autonomy in the presentation of this course, but the approach taken to student assessment for the course is restricted by requirements from external examining bodies.

##### 2. Description of focus class

The class was of 15 (1 male and 14 female) certificated nurses, each with a minimum of one and one half years of post-graduation experience. A small number of nurses had more than 20 years such experience. The age range was 22-50 years. The course being taken for 6 hours per week was Midwifery, as a post-certificate course. The nurses undertaking the course were selected from a large number of applicants and were, therefore,

highly motivated. They came from a range of widely differing previous hospital experiences.

### Repertory Grid 1

#### (a) Elements of the grid

The elements of the initial repertory grid are as follows:

<u>Element</u>	<u>Effective teaching and learning occurs when:</u>
A	The curriculum is based on knowledge and skills brought by the students as entering behaviour.
B	Learning experiences are based on previous experiences.
C	The strategies employed utilize a student's preferred style of learning.
D	The students assist in the planning of their learning experiences.
E	Self-evaluation is used as the basis for different learning needs.
F	Group co-operation is encouraged.
G	The student is actively involved in the learning process.
H	A wide perspective of the subject is presented.
I	The teacher is competent in the area being taught.

#### (b) Constructs (Bi-polar statements)

Using the triad method, the following bi-polar statements were elicited from the set of elements given above:



<u>Construct</u>	<u>Initial Pole</u>	<u>Emergent Pole</u>
1	Learning is based on individual needs.	Learning is most effective when the students' style of learning.
2	Learning grows from previous experience.	Learning increases with student involvement in planning.
3	Effective learning depends on student involvement in planning.	Learning occurs when students negotiate learning strategies.
4	Learning occurs when students define their own learning needs.	Group co-operation increases learning.
5	Active participation is necessary for effective learning.	Self-assessment increases learning.
6	Motivation is increased if application to work/ life experiences is.	Group co-operation encourages learning.
7	Learning is increased if not limited by syllabus boundaries.	Students learn more easily if the teacher is perceived as competent in the clinical field.
8	Learning occurs if the information provided acknowledges the students' starting points.	Students learn more easily if the teacher is perceived as competent in the theoretical field.
9	Learning occurs when the teacher is at ease with the chosen strategies.	Learning occurs when it is individualised.

(c) Completion of the repertory grid

Using the procedures described in chapter 2, section 2.4, the repertory grid was completed as follows:

Repertory Grid 1

Construct		Element								Construct
Initial Pole	A	B	C	D	E	F	G	H	I	Emergent Pole
C1P1	✓	✓	X	✓	✓	X	✓	X	X	C1P2
C2P1	✓	✓	X	X	X	✓	X	✓	X	C2P2
C3P1	✓	X	✓	✓	✓	✓	✓	X	X	C3P2
C4P1	X	✓	✓	✓	✓	X	✓	X	✓	C4P2
C5P1	✓	X	X	X	X	✓	✓	✓	✓	C5P2
C6P1	✓	✓	X	✓	✓	X	✓	✓	✓	C6P2
C7P1	X	X	X	✓	✓	✓	X	✓	X	C7P2
C8P1	✓	✓	✓	✓	✓	✓	✓	X	X	C8P2
C9P1	X	✓	✓	✓	X	✓	X	✓	✓	C9P2

(d) Correlation matrices for elements and constructs

Using the procedures given in chapter 2, section 2.4, the correlation matrices for both the elements and the constructs were completed.

(i) Correlation matrix for elements

[illegible]

(ii) Correlation matrix for constructs

[illegible]

(c) Calculation of coefficients of consistency and plausibility

These are calculated as described in chapter 2, section 2.4.

(i) Coefficient of consistency = 0.48

(ii) Coefficient of plausibility

The median construct correlation score is 5. Hence the adjusted construct matrix is as follows:

[illegible]

Hence the coefficient of plausibility = 0.27

Correlation of the elements

(iv) Interpretation of repertory grids, correlation matrices and coefficients

(i) Co-referencing of elements

Element	Referents			
	R1	R2	R3	R4
A	Curriculum	Knowledge and skills	Students	Entering behaviour
B	Learning experiences	Previous experiences		
C	Strategies (teaching)	Student	Preferred style of learning	
D	Students	Planning	Learning experiences	
E	Self-evaluation	Learning needs		
F	Group co-operative	Learning process		
G	Student	Wide Perspective		
H	Subject	Area (being taught)		
I	Teacher			

An analysis of the referents used in the elements of the repertory grid is shown above. This indicates very little co-referencing. Students are referred to as follows:

Element A (Referent 3)

C (R2),

D (R1),

E (R1),

and G (R1)

This suggests a higher correlation between elements A, C, D, E and G due to co-referencing. That is, these elements may be explicitly related through their reference to students.

If a grid consisting of elements A, C, D, E and G, only is examined, the coefficient of consistency is found to be 0.61. Similarly, the coefficients of consistency for grids consisting of the elements listed are:

<u>Elements</u>	<u>Coefficients of consistency</u>
A - I	0.48
A,B,C,D,E,G	0.60
A,C,D,E,G	0.61
D,E,G	0.66

An inspection of the grid indicates that the maximum coefficient of consistency will be obtained using the set of elements D, E and G. These elements are:

D: The students assist in the planning of their learning experiences.

E: Self-evaluation is used as the basis for different learning needs.

G: The student is actively involved in the learning process.

The emphasis on these three elements is acknowledged by the student, who commented:

On analysis, the area of commonality is that the curriculum is based on an active student participation. This requires the student to assist in the planning of the curriculum, based on the individual and group needs, and the starting point is the student/group previous experiences. Self-evaluation is necessary to define these learning needs. The underlying assumption is that the curriculum is strongly student-centred.

(Student B Notes: Repertory Grid Interpretation, 1986).

A further inspection of the grid shows that elements D, E and G are perfectly correlated with the initial poles of constructs 1,2,3,4,6 and 8. Thus elements D, E and G have been interpreted to mean:

- C1P1: Learning is based on individual needs.
- C2P1: Learning grows from previous experience.
- C3P1: Effective learning depends on student involvement in planning
- C4P1: Learning occurs when students define their own learning needs.
- C6P1: Motivation is increased if application to work/life experiences is obvious.
- C8P1: Learning occurs if the information provided acknowledges the students' starting points.

Thus when elements D,E and G are interpreted to mean the above statements, the description provided by elements D, E and G is perfectly consistent and plausible. That is, the core grid

Construct	Element			Construct
	Initial statement	D	E	
C1P1				C1P2
C2P1				C2P2
C3P1				C3P2
C4P1				C4P2
C6P1				C6P2
C8P1				C8P2

has coefficients of consistency and plausibility of 1.0. The description provided by elements D, E and G is highly intelligible, but the addition of other elements lowers the intelligibility considerably. As for teacher A, it may be concluded that teacher B has a core description, which is highly intelligible. However, attempts to incorporate additional factors into the description result in a loss in intelligibility, and, particularly in the consistency of the elements.

### Repertory Grid 2

#### (a) Elements of the grid

The elements of the repertory grid are as follows:

#### Element    Effective learning and teaching occurs when

- A    The starting point for the lesson is based on the students' previous experience.
- B    The sequencing of the subject matter is negotiated with the students, based on their perceived needs.
- C    Learning is encouraged through experience.
- D    Individual values, both of the teacher and the learner, are considered within the learning process.
- E    The need to encourage understanding of knowledge is emphasised.
- F    The teaching strategies used equate with the purposes of the lesson and type of knowledge.
- G    Self-assessment of learning needs and development is encouraged.
- H    Students are encouraged to share their individual learning experiences.
- I    Social expectations are discussed as a basis for developing understanding.

#### (b) Constructs of the grid

Using the triad method, the following pairs of bipolar statements were elicited from the set of elements given above:



<u>Construct</u>	<u>Initial Pole</u>	<u>Emergent Pole</u>
1	Experience forms the basis of learning.	Sequencing within the curriculum is negotiable.
2	Knowledge is subjective.	Values cannot be separated from learning.
3	Understanding is of prime importance.	Values are personal.
4	Teaching strategies relate to the type of knowledge.	Values are personal.
5	Individual learning needs from the basis of curriculum development.	Teaching styles relate to the purposes of the curriculum.
6	Teaching strategies should encourage student participation.	Assessment should be based on individual development.
7	Learning is individual.	The curriculum should consider social expectations.
8	Student participation is essential.	Community attitudes should be considered in the learning process.
9	Learning should be based on experience.	Community attitudes should be considered in the learning process.

(c) Completion of the repertory grid

Using the procedures described in chapter 2, section 2.4, the repertory grid was completed as follows:

Construct Elements									Construct	
Initial Pole	A	B	C	D	E	F	G	H	I	Emergent Pole
C1P1	✓	X	✓	X	X	✓	X	✓	✓	C1P2
C2P1	✓	X	✓	X	✓	✓	X	✓	X	C2P2
C3P1	✓	X	✓	X	✓	X	X	✓	X	C3P2
C4P1	X	X	X	X	✓	✓	X	X	X	C4P2
C5P1	✓	✓	X	✓	✓	X	✓	✓	X	C5P2
C6P1	✓	X	✓	X	✓	✓	X	✓	✓	C6P2
C7P1	✓	✓	✓	✓	✓	X	✓	✓	X	C7P2
C8P1	✓	✓	✓	X	X	X	✓	✓	X	C8P2
C9P1	✓	✓	✓	X	X	X	✓	✓	X	C9P2

(d) Correlation matrices for elements and constructs

Using the procedures given in chapter 2, section 2.4, the correlation matrices for both the elements and the constructs were completed.

(i) Correlation matrix for elements

[illegible]

(ii) Correlation matrix constructs

Construct	1	2	3	4	5	6	7	8	9
1		7	6	4	2	8	3	5	5
2			8	6	4	8	5	5	5
3				5	5	7	6	6	6
4					3	5	2	2	2
5						3	8	5	6
6							4	4	4
7								7	7
8									9

(e) Calculation of coefficients of consistency and plausibility

These are calculated as described in chapter 2.

(i) Coefficient of consistency = 0.50

(ii) Coefficient of plausibility

The median construct correlation score is 5.  
Hence the adjusted construct correlation matrix is as follows:

Construct	1	2	3	4	5	6	7	8	9
1		2	1	1	3	3	2	0	0
2			3	1	1	3	0	0	0
3				0	0	2	1	1	1
4					2	0	3	3	3
5						2	3	0	1
6							1	1	1
7								2	2
8									4
9									

Coefficient of plausibility = 0.29

(f) Interpretation of the repertory grids, correlation matrices and coefficients of consistency and plausibility

An examination of the referents of the elements shows that there is very limited co-referencing.

An examination of the correlation matrix for the elements shows that the following pairs of elements are highly correlated.

<u>Pair of elements</u>	<u>Correlation score</u>
A, H	9
A, C	8
C, H	8
B, D	7
D, G	7
I, F	7

This suggests

(i) Element E does not correlate highly with any other elements, and can be removed from the grid.

(ii) Elements I and F correlate highly with one another, but not with any other elements. On this basis they may be removed from the grid, and their relationship treated separately.

(iii) The remaining elements may be treated as two groups of elements, namely, group of elements A, C and H, and the group of elements, B, D and G.

The coefficients of consistency for the grids formed from the above combinations of elements are:

<u>Grid elements</u>	<u>Coefficient of consistency</u>
Complete grid	0.50
Grid less element E	0.51
Elements E, I and F	0.55
Grid less elements I & F	0.55

Grid less elements E,I&F 0.78  
 Elements B,D and G 0.85  
 Elements A, C and H 0.93

Hence

- (i) there is little increase in consistency by eliminating element E;
- (ii) there is only a marginal increase in consistency by eliminating elements I and F;
- (iii) there is a substantial increase in consistency by eliminating elements E, I and F, even though this set of elements is not highly consistent;
- (iv) the grids formed from elements B, D and G, and A, C and H are highly consistent.

An inspection of the grid indicates that, if the poles of construct C4 are reversed, then higher correlations will result. An inspection also reveals that constructs C1, C2, C3 and C6 do not strongly discriminate between the elements.

If elements E, F and I are eliminated from the grid the poles of construct 4 are reversed, and the non-discriminating constructs C1, C2, C3 and C6 removed, then the grid becomes:

Construct	Elements						Construct
Initial Pole	A	B	C	D	G	H	Emergent Pole
C4P2	✓	✓	✓	✓	✓	✓	C4P1
C5P1	✓	✓	X	✓	✓	✓	C5P2
C7P1	✓	✓	✓	✓	✓	✓	C7P2
C8P1	✓	✓	✓	X	✓	✓	C8P2
CP1	✓	✓	✓	X	✓	✓	C9P2

An inspection of this grid shows that a grid consisting of elements A, B, G and H show perfect correlation of both elements and the initial poles of the constructs C5, C7, C8 and C9, and the emergent pole of C4. Thus the description of effective teaching and learning given by elements A, B, G and H can be shown to be the most consistent and plausible description available from the original set of elements. This description is:

- A: The starting point for the lesson is based on the students' previous experiences.
- B: The sequencing of the subject matter is negotiated with the students, based on their perceived needs.
- G: Self-assessment of learning needs and development is encouraged.
- H: Students are encouraged to share their individual learning experiences.

For this teacher these statements give the most consistent and plausible, and hence intelligible, description of effective teaching and learning for the focus class of the teacher.

For repertory grid 1, the core elements were found to be elements D, E and G. These were

- D: The students assist in the planning of their learning experiences.
- E: Self-evaluation is used as the basis for different learning needs.
- G: The student is actively involved in the learning process.

A comparison of the elements in these two sets indicates that:

Element E (repertory grid 1) is very similar to element G ( repertory grid 2).

Element D (repertory grid 1) - "The students assist in the planning of their learning experiences" - has been elaborated in repertory grid 2 to include element A - "The starting point for the lesson is based on the students' previous experiences," and element B - "The sequencing of the subject is negotiated with the students, based on their perceived needs". Element H of repertory grid 2 refers to shared learning experiences, and this, in part, may be what is meant by element G (repertory grid 1) - "The student is actively involved in the learning process". Hence, the core elements of repertory grid 2 are an elaboration of the core elements of grid 1, with the ideas of student-teacher negotiation and the sharing of learning experiences between students being introduced.

### Repertory Grid 3

#### (a) Elements of the grid

The following elements were given for this repertory grid:

- |                |  |
|----------------|--|
| <u>Element</u> | <u>Effective teaching and learning occurs when:</u>  |
| A              | Active student participation is encouraged.  |
| B              | The curriculum is negotiated within the constraints of the Nurses Registration Board Guidelines. |
| C              | Self-assessment is encouraged.   |
| D              | Individual perspectives form the basis for discussion and learning.                              |
| E              | Teaching strategies are student-centred.   |
| F              | Relationships between theory and practice are emphasised.  |
| G              | Language is appropriate to the content of the learning.  |
- (b) Constructs (Bi-polar statements)
- Using the triad method described in chapter 2, section 2.4 the following pairs of bi-polar statements were elicited.



<u>Construct</u>	<u>Initial Pole</u>	<u>Emergent Pole</u>
1	Active student participation is essential.	There is a core curriculum.
2	Some aspects of the curriculum are negotiable.	Individual perspectives are important within the curriculum.
3	Entry behaviour forms the basis for curriculum planning	A wide range of teaching strategies should be used.
4	Learning must be seen to be relevant.	Individual differences are discussed.
5	All learning should be initially evaluated.	Experience is the basis for curriculum planning.
6	Learning strategies should be practical.	Negotiation skills should be taught.
7	Assessment is formal.	Individual values must be considered.

(c) Completing the repertory grid

Using the procedures described in chapter 2, section 2.4, the repertory grid was completed.

Construct	Elements								Construct
Initial Pole	A	B	C	D	E	F	G	Emergent Pole	
C1P1	✓	X	✓	✓	✓	X	X	C1P2	
C2P1	✓	✓	X	X	X	✓	✓	C2P2	
C3P1	✓	✓	✓	✓	X	X	X	C3P2	
C4P1	X	✓	X	✓	✓	✓	X	C4P2	
C5P1	X	✓	✓	X	X	✓	✓	C5P2	
C6P1	X	✓	X	✓	✓	✓	X	C6P2	
C7P1	✓	X	X	X	X	✓	X	C7P2	

- (d) Correlation matrices for elements and constructs  
Using the procedures described in chapter 2, section 2.4, the correlation matrices for both the elements and constructs were computed.

(i) Correlation matrix for elements

Elements	A	B	C	D	E	F	G
A		3	4	3	2	2	3
B			2	3	2	6	3
C				4	3	1	4
D					6	2	1
E						3	2
F							4
G							

(ii) Correlation matrix for constructs

Construct	1	2	3	4	5	6	7
1		1	5	3	1	3	2
2			3	3	5	3	6
3				3	3	3	4
4					3	7	3
5						3	4
6							4
7							

- (e) Calculation of coefficients of consistency and plausibility

These are calculated as described in chapter 2, section 2.4.

- (i) Coefficient of consistency = 0.44

(ii) Coefficient of plausibility

The medians of the construct correlation scores are 3 and 4. The adjusted correlation matrix is as follows:

Construct	C1	C2	C3	C4	C5	C6	C7
C1		2	1	0	2	0	1
C2			0	0	1	0	2
C3				0	0	0	1
C4					0	3	0
C5						0	1
C6							1
C7							

(f) Interpretation of the repertory grids correlation matrices and coefficients of consistency and plausibility

There is very limited co-referencing between the elements of the grid. An inspection of the repertory grid shows that the following pairs of elements are highly correlated.

Pairs of elements      Correlation score

B and F

6/7

E and D

6/7

If, on this basis, elements, A, C and G are eliminated, the grid becomes:

Construct	Elements				Construct	
	Initial Pole	B	D	E	F	Emergent Pole
C1P1		X	✓	✓	X	C1P2
C2P1		✓	X	X	✓	C2P2
C3P1		✓	✓	X	X	C3P2
C4P1		✓	✓	✓	✓	C4P2
C5P1		✓	X	X	✓	C5P2
C6P1		✓	✓	✓	✓	C6P2
C7P1		✓	X	X	✓	C7P2

A further inspection indicates that only constructs C4 and C6 are highly discriminatory. Hence the grid may be reduced to the following:

Construct	Elements				Construct
	Initial Pole	B	D	E	F
C4P1					
C6P1					

In this case, the coefficients of consistency and plausibility are both 1.0. Thus, the elements B, D, E and F give the most consistent and plausible description of effective teaching and learning for this teacher for the focus class chosen. This description is as follows:

B: The curriculum is negotiated within the constraints of the Nurses Registration Board guidelines.

D: Individual perspectives form the basis for discussion and learning.

E: Teaching strategies are student-centred.

F: Relationships between theory and practice are emphasised.

(g) Comparison of interpretations of repertory grids 1, 2 and 3

In making this comparison, the teacher concerned commented:

The language used in Repertory Grid 3 was more active, and demonstrated a closer ability to look at my own teaching. Possibly, the terms used, and the concepts outlined, were more closely aligned to the reality of my teaching in opposition to the ideal.

Some areas were omitted from Grid 3. For example, no mention was made of environment, or of teacher competencies. I feel the former has probably lost

significance if emphasis is on the individual,...

I feel many elements in Grid 1 were sublimated into one related to negotiation in Grid 3, for example, group cohesiveness. Also the overall concept portrayed in Grid 3 was one of adult learning, negating the need to include this as an actual element.

(Grid interpretation notes, Teacher B, 1986)

As supported by the teacher's comments, each of the sets of elements produced for the three repertory grids contained a core set of elements. As the programme progressed, this core became more closely focused on the participant's role as a teacher and, in particular, on practical constraints, such as the Nurses Registration Board, on it. Whilst the teacher wished to teach in a style involving a high level of student interaction and negotiation, constraints, including the requirement to relate "theory to practice", were perceived to impinge heavily on that style.

In addition, the emphasis on the learner as an individual, and on adult learning, was seen to remove the need to mention factors such as the learning environment and teacher competence. These factors have been "sublimated into one related to negotiation"; that is, the notion of negotiation is, being used by the teacher to attempt to achieve a highly consistent and plausible description of effective teaching and learning. The teacher's success in teaching effectively, as this role is now perceived, will be highly dependent upon translating this notion into the practice and skills of teaching. The

coefficients of consistency and plausibility for the three grids developed throughout the programme are as follows:

Grid Number	1	2	3
Coefficient of consistency	0.48	0.50	0.44
Coefficient of plausibility	0.27	0.29	0.24

There is no marked change in either the consistency or plausibility of the descriptions of effective teaching and learning given throughout the programme.

The lack of success by the teacher in giving a more consistent and plausible description of effective teaching and learning, and, hence, a more intelligible description, and the continuing conflict between her preferred teaching style and practical constraints on this teaching, is illustrated by the low levels of the coefficients of consistency and plausibility throughout the programme.

#### 6.6 Case Study C (Primary Education)

##### (a) Qualifications and teaching experience

This teacher is a vice-principal in a large primary school (grades K-6) with particular responsibility for the learning programme of grades 3 to 6. He has a first degree and a Diploma of Education, and is, therefore, a four-year trained teacher. Prior to accepting his present position, he was the principal of a small country primary school.

The teacher development programme was undertaken as part of his studies towards the degree of Master of Educational Studies.

(b) Description of the focus class

The class selected was a group of eight (8) grade 5,6 students. This group is withdrawn from their normal class for a set period each day of the teaching week, and for a total time of two hours for that week. All members of the group had poorly-developed language skills. All of the group were boys with very low levels of self-esteem.

Repertory Grid 1

(a) Elements of the grid

These are as follows:

Element

- |   |  |
|---|--|
| A | Children learn most effectively when their individual needs are recognised.  |
| B | Effective learning involves self-motivation.                                 |
| C | Effective learning involves interaction between the teacher and the learner. |
| D | Children need to feel a sense of individual worth.                           |
| E | Effective learning involves practical experiences.                           |
| F | The learner should have a sense of purpose and direction.                    |
| G | The learning program should consider the whole child.                        |
| H | Children learn at different rates.   |

I Active participation by the learner is necessary for effective learning.

J Learners should evaluate their own learning needs.

(b) Constructs

Using the triad method described in chapter 2, section 2.4, the following constructs were elicited.

<u>Construct</u>	<u>Initial Pole</u>	<u>Emergent Pole</u>
1	Effective learning involves interaction between the learners.	Effective learning involves the learners' own initiatives.
2	Effective learning depends on the individual learners attitudes.	Effective learning depends on the attitudes that develop from the relationship between teacher and learner.
3	Effective learning is learner centred.	Effective learning requires teacher input.
4	Effective learning focuses on individual needs.	Effective learning focuses on the needs of the curriculum.
5	Effective learning is based on practical experiences.	Effective learning precedes practical experiences.
6	Effective learning needs to be purposeful for the learner.	Effective learning needs to be purposeful for the teacher.
7	Children learn at different rates.	Children learn at the same rate.
8	Effective learning involves self-evaluation by the learner.	Effective learning involves external evaluation of the learner.





(i) Correlation matrix for elements

Elements	A	B	C	D	E	F	G	H	I	J
A		6	10	9	7	6	7	8	6	6
B			6	7	9	10	6	7	10	10
C				9	7	6	10	9	6	6
D					8	7	9	8	7	7
E						9	7	8	9	9
F							6	7	10	10
G								9	6	6
H									7	7
I										10

(ii) Correlation matrix for constructs

Constructs	1	2	3	4	5	6	7	8	9	10
1		1	2	6	6	6	6	2	6	6
2			9	5	5	5	5	9	5	5
3				6	6	6	6	8	6	6
4					10	10	10	6	10	10
5						10	10	6	10	10
6							10	6	10	10
7								6	10	10
8									6	6
9										10
10										

(e) Coefficients of consistency and plausibility(i) Coefficient of consistency = 0.77(ii) Coefficient of plausibility

The median construct correlation scores is 5 for the score range 0 to 10.

The adjusted construct correlation matrix is as follows:

Construct	1	2	3	4	5	6	7	8	9	10
1		4	3	1	1	1	1	3	1	1
2			3	0	0	0	0	3	0	0
3				1	1	1	1	2	1	1
4					5	5	5	1	5	5
5						5	5	1	5	5
6							5	1	5	5
7								1	5	5
8									1	1
9										5
10										

The coefficient of plausibility = 0.49

(f) Interpretation of correlation matrices and coefficients

(i) Correlation of elements

In interpreting the grid, and its correlation matrices, the teacher concerned focused on those pairs of elements with low correlations of 6/10. Comments made on the various groups of elements were as follows:

Elements A and B: The teacher's perceived needs of the individual may not be seen by the individual as being in their own interests.

Elements B and C: The teacher-learner interaction does not always help to motivate the child. Does this mean that the children would prefer a more structured, teacher-directed situation? This applies to my focus class, where the self-esteem of the children is very low, and, in order to motivate the group, strong teacher input is necessary.

Elements A and F: This confirms the above, since recognition of needs did not correlate highly with the learner's sense of purpose. It also indicates a need to focus on self-esteem itself as an area of learning.

Elements B and G: If we are focusing on the whole child, we are focusing on his strengths and weaknesses. If we are asking the children to focus on weaknesses, then it becomes a delicate issue for them to accept the weakness, and to become motivated to resolving it.

Elements G, I and J: The interaction places as much emphasis on the role of the teacher as it does on the role of the learner. I have a philosophy of the teacher as a facilitator of learning. With my focus class, I provide more direction than I may in a different class. This is true of my teaching style in this school, when compared with the schools in which I have previously taught. This is supported by the low correlation between G, I and J.

(Grid 1 interpretation, Teacher C, 1986)

However, when the teacher contrasted these comments, with his interpretation of the high correlations obtained, he concluded that:

My argument to date is countered by these correlations. Perhaps this highlights a conflict between my teaching philosophy and my teaching style at my current school. It also indicates the fundamental importance of teacher-pupil relationships, and the difficulties the teacher has in meeting the needs of the individual as perceived by the individual, and as perceived by the teacher.

(Grid 1 interpretation, Teacher C, 1986)

These comments highlight the extent to which interpreting the correlation matrix of the

elements of a repertory grid on effective teaching and learning can involve the teacher in a consideration of fundamental professional issues.

(ii) Correlation of constructs

The teacher's comments on those pairs of constructs with low correlations are as follows:

Constructs 1 and 2 (1/10)

The low correlation can be explained by the way the poles were recorded. If the poles of construct 2 were reversed, then these would be a high correlation. Constructs 1 and 2 are similar, and could have been combined.

Constructs 1 and 3 (2/10)

The low correlation reinforces the statements relating to teacher-learner input.

Constructs 1 and 8 (2/10)

The low correlation does not fit with my focus class, where personal and immediate feed-back is important. However, if we look at the two poles that do correlate we see that there is a high correlation between learner initiations and self-evaluation.

(Grid Interpretation, Teacher C, 1986)

In discussing those constructs with high correlations the teacher commented as follows:

Constructs 4, 5, 6, 7, 9 and 10 (Their initial poles) are integral parts of the educational philosophy as outlined in the Committee on Primary Education (C.O.P.E.) report (1972) for primary education in Tasmania.

For primary teachers, these are fundamental to the learning process. As a result, this only confirms my view of teaching. More value may have been gained by making the constructs less bi-polar. This is necessary to enable a more critical look at the widely accepted beliefs outlined above.

(Grid 1 Interpretation, Teacher C, 1986).

(iii) Focusing the grid

If, in the light of the above comments, constructs C1,C2, C3 and C8 are removed, the resulting grid of elements A to J and constructs C4,C5,C6,C7,C9 and C10 is perfectly correlated. In this case, the coefficients of consistency and plausibility are both 1. However, as previously commented by the teacher concerned, the description of effective teaching and learning, and the interpretation of this provided by the initial poles of the above constructs, does not go beyond that provided by the C.O.P.E. report (1972). Constructs, whose poles discriminate between the educational issues involved, are required.

This teacher began the programme with a highly consistent and plausible description of effective teaching and learning, but with some personal doubts about the matching of his educational philosophy, and the teaching style adopted for the focus class.

Repertory Grid 2(a) Elements of the grid

These are as follows:

<u>Element</u>	<u>Statement of Element</u>
A	Efficient teaching provides significant experiences that enable the children to change their attitude to learning.
B	Efficient learning involves a balance between what the child receives and which he gives.
C	Efficient learning involves tasks that should be personally relevant to the learner.

- D Efficient teaching and learning involves interaction between the teacher and the learner.
- E The teacher should provide a discovery model of learning.
- F Efficient learning involves learner awareness of his own rate of development.
- G Efficient teaching and learning is based on an awareness of language as central to the learning process.
- H Efficient teaching involves an awareness of appropriate teaching and learning methods and styles.
- I Efficient learning involves learner awareness of the overall context of the learning.
- J Efficient teaching involves teacher awareness of individual learning rates.

(b) Constructs

<u>Construct</u>	<u>Initial Pole</u>	<u>Emergent Pole</u>
C1	Learning is based on personally relevant experiences.	Learning is a balance between personal experiences and given experiences.
C2	Interaction between teacher and learner occurs through the teacher approaching learning from the students' standpoint.	Interaction between teacher and learner occurs by the teacher becoming a learner with the learner.
C3	An awareness of rates of development occurs through a discovery.	An awareness of rates of development occurs through language.
C4	Appropriate methods and styles are based on individual rates.	Appropriate methods and styles are based on the language used.

C5 The teacher's methods Language provides an and styles provide an awareness of the overall context of teaching.

C6 Interaction between the teachers and the learners should be language based.

C7 A balanced learning approach is achieved by an awareness of the overall learning context.

C8 Significant learning experiences can be provided by a variety of teaching approaches.

C9 Relevance for the learner arises from the language used.

C10 Interaction between the teacher and the learner occurs with a discovery model of learning.

(c) Repertory Grid

Using the procedures described in chapter 2, section 2.4, the repertory grid was completed as follows:



Construct		Elements								Construct	
Initial Pole	A	B	C	D	E	F	G	H	I	J	Emergent Pole
C1P1	✓	X	✓	X	X	✓	X	X	X	X	C1P2
C2P1	✓	X	✓	✓	X	X	✓	✓	✓	✓	C2P2
C3P1	✓	X	✓	X	✓	✓	X	✓	✓	✓	C3P2
C4P1	✓	X	✓	X	✓	✓	X	✓	✓	✓	C4P2
C5P1	✓	✓	✓	X	✓	✓	X	✓	✓	✓	C5P2
C6P1	X	X	X	X	X	X	✓	✓	✓	✓	C6P2
C7P1	X	✓	✓	✓	✓	X	✓	✓	✓	✓	C7P2
C8P1	✓	✓	✓	✓	X	X	✓	✓	✓	✓	C8P2
C9P1	X	X	X	X	X	X	✓	X	X	X	C9P2
C10P1	X	X	X	X	X	✓	X	X	X	X	C10P2

As the teacher was unable to complete the grid for elements H, I and J these have been excluded from the grid when completing the correlation matrices.

(d) Correlation matrices and coefficients

(i) Correlation of elements

The correlation matrix for elements is

Elements	A	B	C	D	E	F	G
A		5	10	5	5	9	3
B			5	8	6	6	6
C				5	5	7	3
D					4	4	8
E						6	2
F							2

The coefficient of consistency = 0.55

(ii) Correlation of constructs

The correlation matrix for the constructs is

Constructs	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
C1		4	6	6	5	3	0	3	3	3
C2			3	3	2	4	3	6	4	2
C3				7	6	2	1	2	2	4
C4					6	2	1	2	2	4
C5						1	2	3	1	3
C6							4	3	7	5
C7								4	4	4
C8									3	1
C9										5
C10										-

The median construct correlation scores are 3 and

4. The adjusted construct correlation matrix is as follows:

Constructs	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
C1		0	2	2	1	1	3	0	0	0
C2			0	0	1	0	0	2	0	1
C3				3	2	1	2	1	1	0
C4					2	1	2	1	1	0
C5						2	1	0	2	0
C6							0	0	3	1
C7								0	0	0
C8									0	2
C9										1
C10										

The coefficient of plausibility = 0.30

(iv) Interpretation of correlation matrices and coefficients of consistency and plausibility

(a) Correlation of elements

In considering those groups of elements with a high correlation, the teacher made the following comments:

Elements A and C

These two elements could be combined, successfully, to read:

"Efficient teaching provides personally relevant and significant experiences that enable the learner to develop positive attitudes towards learning."

Elements A and F

I have had difficulty in justifying element F (Efficient learning involves learner awareness of his own rate of development). The high correlation between A and F classifies my thoughts in this way. The learner's awareness of his rates of development does not necessarily involve knowledge of learning theories. It involves a sense of progress, a sense of achievement, a sense of competence. Thus, the significant experiences in this context are those experiences which provide the learner with a sense of development. Element F is re-written as:

"Efficient learning involves a learner sense of development".

Elements B and D

These two elements could be successfully combined to read:

"Efficient teaching and learning involves a balanced interaction between the teacher and the learner."

Elements C and F

Given my description of awareness of rates of development above, the relevance of the learning tasks and the learner's sense of development are closely related. The issue is whether relevance

leads to a sense of development, or whether a sense of development provides relevance to the learning. Both directions are legitimate, and should be recognized. Perhaps, I should go a step further, and state that a task is relevant if it provides a sense of development.

#### Elements E and F

An awareness of development is an integral part of the discovery model of learning.

#### Elements H, I and J

Appropriate teaching and learning styles are those which provide an awareness of the learning context, and which take into account individuals. Elements H and I could be combined to read:

"Efficient teaching involves an awareness of individual teaching and learning styles".

(Repertory Grid 2, Interpretation, Teacher C, 1986).

For the reasons given above, the teacher revised the elements of the grid. These elements, and the comments made by the teacher, are as follows:

### Revised Elements

A. Efficient teaching provides personally relevant and significant experiences that enable the learner to develop positive attitudes towards learning.

This raises the issue as to which experiences are relevant and how this is decided. It presumes emphasis on individual needs. It requires the teacher to make continual judgements about the curricula, balancing social needs with individual needs.

B. Efficient teaching and learning involves a balanced interaction between the teacher and the learner.

This presumes a learning relationship based on mutual respect. It involves a balance between teacher directed learning and learner initiated learning.

C. Efficient teaching involves an awareness of individual teaching and learning styles.

One way of describing different teaching styles is as follows:

teaching from a teachers viewpoint i.e. the master to the student.

teaching from the learners viewpoint e.g. teaching according to states of development.

learning with the learner i.e. the teacher is very much a facilitator in the learning process.

Effective teaching depends on the judgements made within this continuum; when to facilitate, when to respond to needs, when to tell!

D. Efficient learning involves a learner sense of development.

This relates closely to Element A. The learner needs to want to learn and to see himself as learning. This involves self esteem, personal goals, teacher feedback, self motivation, etc.

E. Efficient teaching and learning involves an awareness of language as central to the learning process.

A key issue is how much learning is an internal process and how much learning depends on relationships with others and the communication within that relationship i.e. how much learning comes from the experience itself and how much comes from the communication of ideas, feelings, shared perceptions.

F. Efficient teaching and learning involves an awareness of the overall context of learning.

The context can be the learner himself i.e. the whole child cliché. It can refer to the learning environment i.e. the physical, social, cultural, political, etc. etc.

It can also refer to the relationships within the curricula i.e. between subject areas.

(ii) Correlation of constructs

The teacher's comments on the pairs of constructs with high correlations are as follows:

Constructs C4 and C5

An awareness of the overall content of learning involves:

- the language used
- the teaching styles
- the learning styles
- individual rates of development
- learning content
- physical environment

Constructs C9 and C10

The key concepts are relevance and interaction: relevance requires interaction, and interaction requires relevance.

Constructs C3 and C4

Appropriate teaching methods and styles involve:

awareness of discovery approaches  
awareness of language  
awareness of individual learning rates

Constructs C1 and C3

Personally relevant learning experiences relate very closely to discovery approaches. Given experiences rely very heavily on language to create relevance.

Constructs C1 and C4

Personally relevant experiences are created by matching teaching styles to individual development.

Constructs C5 and C8

I cannot think of a reason for this high correlation!

Constructs C7 and C8

Significant learning experiences are provided by a balanced learning approach.

(Grid Interpretation Notes, Teacher C, 1986)

(vii) General interpretation

As argued previously, elements H, I and J may be removed from the grid. An inspection of the grid suggests reversing the poles of constructs C6, C7, C9 and C10. If this is done, the grid is as follows:

Construct		Elements						Construct
Initial Pole	A	B	C	D	E	F	G	Emergent Pole
C1P1	✓	X	✓	X	X	✓	X	C1P2
C2P1	✓	X	✓	✓	X	X	✓	C2P2
C3P1	✓	X	✓	X	✓	✓	X	C3P2
C4P1	✓	X	✓	X	✓	✓	X	C4P2
C5P1	✓	✓	✓	X	✓	✓	X	C5P2
C6P2	✓	✓	✓	✓	✓	✓	X	C6P1
C7P2	✓	X	✓	X	X	✓	X	C7P1
C8P1	✓	✓	✓	✓	X	X	✓	C8P2
C9P2	✓	✓	✓	✓	✓	✓	X	C9P1
C10P2	✓	✓	✓	✓	X	✓	✓	C10P2

The correlation matrix for the elements remains unaltered by any reversal of construct poles.

The correlation matrix for the constructs is as follows:

[illegible]



The median construct correlation score is 4.  
Hence the adjusted correlation matrix is as follows:

Construct	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
C1		0	2	2	1	0	3	0	0	0
C2			0	0	1	0	0	2	0	1
C3				3	2	1	2	1	1	0
C4					2	1	2	1	1	0
C5						2	1	0	2	0
C6							0	0	3	1
C7								0	0	0
C8									0	2
C9										1
C10										

With the reversal of the poles of constructs C6, C7, C9 and C10 there is no effective change in the plausibility of the constructs.

#### Repertory Grid 3

##### (a) Elements of the grid

These are as follows:

<u>Element</u>	<u>Statement of element</u>
A	Effective learning involves a high degree of interacting between the teacher and the students.
B	Effective learning involves the developing of children's general abilities.
C	Effective learning involves significant experiences that have intrinsic value.
D	Effective learning involves a supportive environment.
E	Effective learning involves recognising individuals.

- F Effective learning involves communicating understandings.
- G Effective learning involves a sense of purpose.
- H Effective learning involves various ways of experiencing.
- I Effective learning is dynamic.

(b) Constructs

Using the triad method described in chapter 2, section 2.3, the following bi-polar constructs were elicited:

<u>Construct</u>	<u>Initial Pole</u>	<u>Emergent Pole</u>
C1	Interaction between teachers and students involves significant experiences of intrinsic values.	The development of children's abilities involves significant experiences of intrinsic values.
C2	A supportive environment develops children's general abilities.	A supportive environment involves significant experiences that have intrinsic value.
C3	A supportive environment involves recognizing individuals.	Significant experiences of intrinsic worth involves recognizing individuals.
C4	Communicating understanding involves a supportive environment.	Communicating understanding involves recognizing individuals.
C5	A sense of purpose involves communicating understandings	A sense of purpose involves recognizing individuals.
C6	Communicating understanding involves various ways of	Communicating understandings involves a sense of purpose.

- C7 A sense of purpose is Various ways of experiencing are dynamic.
- C8 A supportive environ- A supportive environ- ment involves a high ment involves a sense degree of interaction. of purpose.
- C9 Developing general abilities involves recognizing individuals. Developing general abilities involves various ways of experiencing.
- C10 Significant exper- iences of intrinsic value are dynamic. Significant exper- iences of intrinsic value involve comm- unicating under- standings.

(c) Repertory Grid

Using the procedures described in chapter 2, section 2.3, the repertory grid was completed.

Constructs			Elements							Constructs	
Initial Pole	A	B	C	D	E	F	G	H	I	Emergent Pole	
C1P1	✓	X	✓	✓	✓	✓	✓	✓	✓	C1P2	
C2P1	X	✓	X	X	X	✓	✓	X	X	C2P2	
C3P1	✓	✓	X	✓	X	✓	✓	X	✓	C3P2	
C4P1	X	X	X	✓	X	X	X	X	X	C4P2	
C5P1	✓	X	X	✓	X	✓	✓	X	X	C5P2	
C6P1	✓	X	✓	X	✓	X	X	✓	✓	C6P2	
C7P1	✓	✓	X	✓	X	✓	✓	X	✓	C7P2	
C8P1	✓	X	✓	✓	✓	X	X	✓	✓	C8P2	
C9P1	✓	✓	✓	✓	✓	✓	✓	X	✓	C9P2	
C10P1	✓	X	✓	X	✓	X	X	✓	✓	C10P2	

(d) Correlation matrices

These were completed according to the procedures described in chapter 2, section 2.3.

Correlation matrix for elements

Elements	A	B	C	D	E	F	G	H	I	J
A		4	7	7	7	6	6	6	9	
B			3	5	3	8	8	2	5	
C				4	10	3	3	9	8	
D					4	7	7	3	6	
E						3	3	9	8	
F							10	2	5	
G								2	5	
H									7	

Correlation matrix for constructs

Constructs	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

(e) Coefficients of consistency and plausibility

(i) Coefficient of consistency = 0.57

(ii) Coefficient of plausibility

The median construct scores for the range of 0 to 9 are 4 and 5. Therefore, the adjusted construct correlation matrix is as follows:

Adjusted construct correlation matrix

Construct	1	2	3	4	5	6	7	8	9	10
1		2	0	2	0	1	0	2	2	1
2			1	0	1	3	1	4	0	3
3				0	2	2	4	1	2	2
4					1	1	0	0	2	1
5						2	2	1	0	2
6							2	3	0	4
7								1	1	2
8									0	3
9										0
10										

The coefficient of plausibility = 0.28

(e) Interpretation of the repertory grid and correlation matrices

(i) Co-referencing of elements

The elements, and their referents are as follows:

Element	Referents		
	R1	R2	R3
A	Interacting	Teachers	Students
B	Development	Children's	Abilities
C	Significant Experience	Intrinsic Values	
D	Supportive Environment		
E	Recognizing	Involved	
F	Communicating	Understandings	
G	Sense of purpose		
H	Experiences		
I	Dynamism		

As can be seen from the above table there is very little co-referencing between elements.

(ii) Highly correlated pairs of elements

The teachers' comments on these were as follows:

Elements A and I (9/10)

The dynamic nature of learning is a result of interactions.

Elements E and H, and C and H (9/10 and 9/10)

Each individual has a preferred learning style.

Elements C and E (10/10)

The needs and interests of individuals need to be taken into consideration so that learning experiences will be meaningful.

Elements F and G (10/10)

The purpose of learning is to enable some common agreements or understandings to be reached.

This correlation helps me the most in coming to terms with the conflict I have sometimes felt between meeting the needs of individuals, and the needs of myself as a teacher. For me, it means finding some common ground, whereby both learners and teacher can satisfy their individual needs. In my focus class, the search for this common ground is the basis for my operation (as a teacher).

(Grid 3 Interpretation, Teacher C, 1986)

(iii)

Pairs of elements with low correlations

The teacher's comments on these were as follows:

Elements Band H (2/10)

The low correlation perhaps indicates some confusion over the best possible ways for developing children's abilities. Certainly, for my focus a variety of experiences are provided.

Elements G and H, and F and H (2/10 and 2/10)

The low correlations indicate not confusion as first thought, but reinforcement of the fact that a variety of experiences is necessary. The low correlation indicates that different experiences are relevant in different circumstances.

(Grid 3 Interpretation, Teacher C, 1986)

The teacher went on to say that:

Having examined the grid closely, the following issues appear to emerge. I equate supportive environment with

- (a) recognizing intrinsic value;
- (b) common understanding, and
- (c) interaction.

For the focus class this indicates a highly personal teaching approach.

- (b) Various ways of experiencing allow for individual learning styles. There is a general assumption that "first hand experiences" are best. It may be that it is not the type of experience that counts but how well that experience fits the needs of the individual.

My focus class is an unusual collection. Certainly experiences that are normally successful for other children are not always successful in this group.

- (c) There is a conflict of interest, at times, between group needs and individual needs.

For my focus class, I am more aware of the need to develop group cohesiveness and identity because of the egocentric nature of the children.

Perhaps this indicates that a highly individual approach to learning is fine if the children already possess group skills. If they do not then the development of empathy for others is vital.

- (d) The development of general abilities provides me with a sense of purpose.

The focus class lacks the ability to see relationships, connections, between learning experiences. My role is to develop their insights into relationships. Thus the teaching program is not a lock-step, sequenced approach aimed at developing specific sub-skills. This latter approach is often the approach taken when teaching "remedial readers".

- (g) Changes in consistency and plausibility throughout the programme

The coefficients of consistency and plausibility for the three repertory grids are as follows:



Repertory Grid			
Coefficient of	1	2	3
Consistency	0.77	0.55	0.57
Plausibility	0.49	0.30	0.28

The increasing awareness of alternative perspectives of teaching and learning facilitated by the teacher development programme, and the conflicts the teacher has described in relation to his role in providing effective teaching and learning for the focus class, have made it difficult for this teacher to give a highly consistent and plausible description of effective teaching and learning for that class. This conflict is indicated, also, by the teacher's apparent inability to give a plausible interpretation of the reasonably consistent descriptions he was giving.

For this case, the repertory grid procedures for monitoring consistency, co-reference and plausibility have helped this teacher identify his strongly held beliefs about effective teaching and learning, and the clash between these and his perception of the needs of the students in the focus class. Providing a more intelligible, coherent and plausible, description of effective teaching and learning for this class will entail the resolution of this conflict.

#### 6.7 EVALUATION OF THE EFFECTIVENESS OF THE PROGRAMME IN MEETING ITS GENERAL PURPOSES

In this chapter, three case studies have been undertaken. These case studies included the participants' interpretations and analyses of the three repertory grids they developed during the

teacher development programme. For each of these repertory grids, in each case study;

(i) The elements describing effective teaching and learning for the focus class, the constructs elicited from these elements, and the repertory grid formed by these elements and constructs, were listed.

(ii) Correlation matrices for both elements and constructs were completed.

(iii) The coefficients of consistency and plausibility were computed.

(iv) An interpretation of the repertory grid, its correlation matrices, and the coefficients of consistency and plausibility, was undertaken.

For each set of three repertory grids, for each of the three cases considered, the changes in the coefficients of consistency and plausibility, and the teachers' interpretations of these changes, were discussed. All of the above were then used to discuss the changes, if any, in the intelligibility of the descriptions of effective teaching and learning given by the teachers.

In case A, the initial descriptions given for effective teaching and learning had coefficients of consistency and plausibility of 0.83 and 0.71, respectively. These were reduced to 0.59 and 0.24, respectively, for repertory grid 2. This reduction was seen to result from an increased awareness by teacher A of a greater range of possible alternative descriptions for effective teaching and learning. At the same time, an analysis of this grid indicated the retention of some "core factors" by the teacher in describing effective teaching and learning. Repertory grid 3 used a wider range of referents in its elements,

and had higher coefficients of consistency and plausibility of 0.84 and 0.86, respectively. This was interpreted to indicate that the teacher had been able to accommodate a wider range of educational perspectives in the description of effective teaching and learning.

The changes in the coefficients during the programme indicate that the consistency of the descriptions of effective teaching and learning has been retained at a high level, and that there was a significant increase in the plausibility of this description, 0.71 to 0.86, or 0.76 to 1.0 for the adjusted repertory grid.

This appears to indicate that participation in the programme has not changed the logical consistency of the description given, but has increased the teacher's capacity to give plausible interpretations of these descriptions. That is, a core of elements has been retained by the teacher, but these elements may now be given more plausible interpretations. In this sense, the intelligibility of the descriptions of effective teaching and learning given by this teacher has been enhanced.

For teacher B, each set of elements produced for the three repertory grids contained a core set of elements. As the programme progressed, this core became more clearly focused on the participants' role as a teacher, and on the practical constraints on her position. The conflict between these two factors was highlighted, but not resolved, by the programme. This lack of resolution agrees with the lack of any significant

change in the coefficients of consistency and plausibility throughout the programme. This participant will not be able to give a more consistent and plausible, and hence more intelligible, description of effective teaching and learning until this conflict is resolved, or removed.

In a similar way, for teacher C

The increasing awareness of alternative perspectives of teaching and learning facilitated by the teacher development programme, and the conflicts the teacher has described in relation to his role in providing effective teaching and learning for the focus class, have made it difficult for the teacher to give a highly consistent and plausible description of effective teaching and learning for that class. (p.364)

Again,

For this case, the repertory grid procedures for monitoring consistency, co-referencing and plausibility have helped this teacher identify his strongly held beliefs about effective teaching and learning, and the clash between these and his perception of the needs of his students in the focus class. Providing a more intelligible, coherent and plausible, description of effective teaching and learning will entail the resolution of this conflict. (p.364)

For teacher A, descriptive intelligibility for effective teaching and learning has been enhanced. For teachers B and C, an increase in descriptive intelligibility depends upon the resolution of a conflict relating to their perceptions of teaching and learning. That is, whilst descriptive intelligibility has not been enhanced for teachers B and C, a condition necessary for this enhancement has been clearly identified. This

condition may be made a focus for any further teacher development.

Although descriptive intelligibility has been enhanced for one case only, the teacher development programme has been effective in identifying conditions necessary to a further enhancement of intelligibility in the other two cases. That is, thesis C2 has not been established.

In all three cases, the procedures developed for analysing and interpreting repertory grids for descriptions of effective teaching and learning have been applied successfully to monitoring changes in the co-referencing, consistency and plausibility of these descriptions. To the extent that co-referencing, consistency and plausibility are contributing factors to intelligibility, these procedures have permitted the monitoring and assessing of changes in the intelligibility of these descriptions of effective teaching and learning.

That is, thesis C1 has been supported.

## CHAPTER 7

### EVALUATION OF THE EFFECTIVENESS OF THE PLANNING, CONDUCT AND READING PROGRAMME FOR THE TEACHER DEVELOPMENT PROGRAMME

- 7.1 Evaluation of the planning and conduct of the programme:
- (i) The use of repertory grids;
  - (ii) Assessment procedures;
  - (iii) The focus class;
  - (iv) General responses to the teacher development programme;
  - (v) Summary of recommendations for future programmes.
- 7.2 Evaluation of the reading programme:
- (i) Participant responses;
  - (ii) Recommendations for future programmes.
- 7.3 Recommendations for future programmes.

### 7.1 Evaluation of the planning and conduct of the programme

The responses to questions (b), (c), (d), (e), (f), (g), (h), (j), (k) and (l), as given in section 5.3, and the summaries of these responses, as given in section 5.3(b), 5.3(c), 5.3(d), 5.3(e), 5.3(f), 5.3(g), 5.3(h), 5.3(j), 6.4(k) and 6.4(l), respectively, have been used to evaluate the planning and conduct of the teacher development programme under the following headings:

- (i) The use of repertory grids;
- (ii) Assessment procedures;
- (iii) The focus class;
- (iv) General responses to the approach to teacher development;
- (v) Summary of recommendations for future programmes.

#### (i) The use of repertory grids

In commenting on the teacher development programme the participants were asked:

What are the advantages and disadvantages of the use of repertory grids in helping teachers describe effective teaching and learning?

The responses to this question, and a summary of these responses, are given in chapter 5, section 5.3.

These comments indicate strong support by the participants for the use of repertory grids. The stated advantages of their use include:

- (i) The facilitation of reflection in both teaching practice and philosophies;

- (ii) They provide a systematic way of encouraging personal reflection on teaching practices and beliefs;
- (iii) They assist in giving insights into the relationship between theory and practice;
- (iv) Consideration and exploration of alternative perspectives on teaching and learning is encouraged;
- (v) It supports the development of a discourse on teaching and learning;
- (vi) Providing a crucial tool for analysing and interpreting literature on education and teaching.

The disadvantages associated with their use include:

- (i) The considerable time required;
- (ii) The techniques of their use may become more important to the user than the issue being investigated;
- (iii) Their application may be limited to "theoretical environments" such as in taught courses;
- (iv) Difficulties in developing constructs which distinguish subtle differences in assumptions about teaching and learning.

Whilst considerable programme time was spent in familiarizing participants with the use of repertory grids, this time, as suggested by several participants, could have been shortened with the use of more suitable introductory exercises. This suggests that the handbook on repertory grid techniques (appendix G) developed for this programme, should include a sequence of introductory exercises, of increasing complexity, using repertory grid techniques of analysis and interpretation. In particular, exercises to



assist participants with the use of the triad method for eliciting bi-polar constructs are very important.

Whilst there is always some danger that the use of any technique will obscure the purposes of its use, this tendency will be reduced by a deeper understanding of the theoretical basis for repertory grid analysis. This suggests there is a need to acquaint students, more fully, with this theoretical basis, and to refer to it during the use of these grids. Some re-writing of the handbook to give more details of the theoretical assumptions underlying the development and use of repertory grids, and a greater emphasis on this during the conduct of the programme, would seem desirable.

As suggested above, the inclusion of a range of examples of the practical use of repertory grids in the handbook should lessen the view that they can only be used effectively in "theoretical environments".

The difficulties experienced in developing constructs, which distinguish subtle differences in assumptions about teaching and learning, indicate a lack of both range and permeability of the constructs used. To lessen this difficulty, readings may have to be provided which suggest such subtle distinctions. This implies that the programme readings may have to include readings that relate more directly to effective teaching and learning, and include the discussion of more subtly contrasting perspectives of teaching and learning.

The participants' responses to the use of repertory grids suggest that:

(i) The handbook supplied to participants be modified to include a series of graded examples of the use of repertory grids in investigating "practical" issues of teaching and learning, and a discussion of the theoretical assumptions underlying the use of repertory grids;

(ii) The readings used in the programme include some which allow for the development of constructs which give more subtle distinctions in perspectives on effective teaching and learning.

(ii) Assessment procedures

Participants were asked to respond to the following question on the assessment of participants for the programme:

What are your views on the approach taken to assessment for the programme?

The responses to this question, and a summary of these responses, are given in this chapter, section 5.3 (j). These comments indicate that participants supported the approach taken to assessment. In particular, support was given to:

- (i) The "student-centred" emphasis in the assessment procedures;
- (ii) The "contextual appropriateness" of the assessment approach;
- (iii) Its meaningfulness in focusing on self-evaluation.

(iii) The Focus Class

In commenting on the teacher development programme, the participants were asked:

What are the advantages and disadvantages of the use of a focus class as a basis for teacher development?

These comments are summarised in chapter 5, section 5.3 (h). The comments indicate strong support by the participants for the use of a focus class. The stated advantages of this use included:

- (i) Insights from the programme could be applied in a relevant, personal and intimate way;
- (ii) Enabled ideas and theories to be tested in a practical way;
- (iii) Facilitated thinking about, and adjustment of, teaching methods, curriculum content and student expectations for the focus class.

It was suggested that the requirements for a focus class should be more clearly stated to participants prior to the programme. This may be done by modifying the preliminary information sent to participants to include more detail of the purpose and use of the focus class in the teacher development programme.

(iv) General responses to the approach to teacher development

The questions relating to the general planning and conduct of the teacher development programme were:

- (i) Which aspects of the course do you consider to be of particular professional assistance, and why do you consider them to be so?
- (ii) Which aspects of the course were not of professional assistance?

(iii) Is the approach taken to conducting this programme a possible model for teacher development and, if so, why, and, if not, why not?

- (iv) What are your comments on the notion of professional development assumed by the programme and its conduct?
- (v) In what ways should the programme be modified for future classes?
- (vi) What are the likely long-term effects of the course?

The participants' responses to these questions, and a summary of these responses, are given in chapter 5, sections 5.3(b), 5.3(c), 5.3(d), 5.3(e), 5.3(f), 5.3(k) and 5.3(l), respectively.

The summaries of the responses indicate the following strengths of the planning and conduct of the programme;

- (i) The continued challenge to perspectives and beliefs on effective teaching and learning;
- (ii) Group discussions, including the sharing and free expression of ideas, and an enhanced capacity to communicate on effective teaching and learning;
- (iii) The emphasis on clarity of language and terminology;
- (iv) Increased personal confidence;
- (v) A body of knowledge which helped in the examination of teaching styles and methods;
- (vi) Participants being able to contribute to the programme in a non-threatening and open way;
- (vii) Diversity of background and experience, and therefore input, of the participants;
- (viii) Negotiation of the course by those who have a stake;
- (ix) An emphasis on the processes of the programme rather than an exclusive emphasis on its outcomes;

(x) The programme encouraged a focus on practice. The weaknesses indicated by the participants comments include:

(i) The absence of a follow-up period for further discussion and reflection on selected approaches to teaching and learning;

(ii) The high and intense workload of the course.

(v) Summary of recommendations for future programmes

Participants suggested the following modifications for future programmes:

(i) The provision of additional tutorial periods;  
 (ii) Regularizing the period of time between the three periods of the programme;

(iii) A more detailed introduction of each participant to the programme members;

(iv) The implementation of procedures for indicating participant progress during the course.

The extension of the daily period of the programme will facilitate the introduction of additional tutorial periods, and the schedule for the programme can be adjusted to regularize the periods of time between the three teaching periods of the programme. A more detailed introduction of each participant can be made using the increased daily time available. Discussions with individual participants at regular intervals during the programme could be implemented to assist with indicating student progress during the programme.

## 7.2 EVALUATION OF THE READING PROGRAMME(P2)

### (i) Participant responses

In seeking the participants' responses to the reading content of the teacher development programme the following question was asked:

What was the strength and weaknesses of the readings supplied for the programme in assisting with teacher development?

The responses to this question are given in chapter 5, section 5.3(t). These responses were summarized as follows:

- (i) The readings "allowed me to become more aware that the various approaches to teaching and learning reflect various philosophical positions (Teacher D);
- (ii) Some course readings were found to be very worthwhile in that they "stimulated ideas and knowledge that could be built on and used" (Teacher E);
- (iii) There were some difficulties, at least initially, with some of the language used in the readings;
- (iv) Group discussions, and lecturer input, for the readings was very important;
- (v) "These exercises (readings) produced a feeling of fulfilment. The philosophical examination, mental exercise, heightened educational awareness and the exposure to teaching and learning rationale combined to provide a multi-dimensional stimulation." (Teacher F);
- (vi) The readings were directly relevant and challenging, but intense;
- (vii) Further discussions of the ideas presented in the readings would have been helpful;

(viii) The readings were helpful in "developing skills in the critical analysis of abstract theories and bringing them back to reality" (Teacher P);

(ix) The readings assisted in "developing a background of knowledge in current theory on teaching and learning (Teacher P).

Other responses included:

(x) The large gap between the theory presented in the readings, and actual classroom practice;

(xi) Appropriately written readings can form a sound basis for group discussions.

### 7.3 RECOMMENDATION FOR FUTURE PROGRAMMES

These comments suggest that the readings provided for the programme were supportive of the approach being taken to teacher development, particularly in stimulating ideas and making participants aware of a range of philosophical positions regarding theories of effective teaching and learning. Generally, the readings were found to be directly relevant and challenging.

The comments also suggest that there is a need to consider carefully the clarity of the language used in these readings, and to recognise the critical role of lecturer input and group discussions in making these readings effective, particularly in bridging any gaps between theory and practice.

The difficulties identified by the participants were in:

- (i) Developing and interpreting repertory grids;

- (ii) Understanding some of the language and terminology used in the readings, and particularly relating the readings to classroom practice;
- (iii) Sustaining involvement in, and commitment to, the programme during the periods between programme sessions;
- (iv) Being aware of personal progress during the programme.
- (v) Coping with the high, and intense, work-load of the programme.

In relation to these difficulties, participants made the following suggestions:

- (1) Additional tutorial sessions, particularly relating to the readings, may have been helpful;
- (11) Regularizing, and reducing, the length of time between programme sessions is desirable to improve the involvement and commitment of participants;
- (111) Providing a detailed example of repertory grid analysis and interpretation at the commencement of the programme is highly desirable;
- (iv) Modifying the repertory grid approach so that it could be used in schools more readily;
- (v) Developing procedures for informing participants of their progress throughout the course.

The recommendations for future programmes arising from the above evaluations are:

- (i) Modification of the handbook for introducing participants to repertory grid techniques to include:



- (a) A sequence of graded, practical, introductory exercises.
- (b) Exercises for using the triad method to elicit bi-polar constructs;
- (c) A more detailed account of the theoretical basis of repertory grids, and the application to issues relating to teaching and learning.

(ii) Modification of the readings for the programme to include:

- (a) Readings more directly related to subtle different perspectives of effective teaching and learning;
- (b) Clearer language and terminology.

(iii) Supplementing participant assessment with lecturer-participant discussions.

(iv) Modifying the preliminary information on the selection of a focus class by giving more detail of the purpose and function of this class in the programme.

(v) Extending the daily period of time available for the programme to facilitate:

- (a) Additional tutorial periods;
- (b) A more extensive introduction of each participant;
- (c) Implementing procedures for indicating participant progress during the programme.

SECTION IV

GENERAL APPROACH TO TEACHER DEVELOPMENT

## CHAPTER EIGHT

### A GENERAL APPROACH TO TEACHER DEVELOPMENT

#### General approach to teacher development

##### (i) Evaluation of study theses

In chapter one of this study, the theoretical and methodological implications of applying a touchstone approach to theory development to:

- (i) planning and conducting the teacher development programme (P1),
  - (ii) developing the reading content of the programme (P2),
  - (iii) monitoring and assessing the changes in the intelligibility of participants' descriptions of effective teaching and learning (P3), and
  - (iv) evaluating the effectiveness of the teacher development programme (P4),
- were considered.

In chapter two, the theoretical and methodological implications of applying the corollaries of Kelly's Theory of Personal Constructs (1955) to the constituent problems P1 to P4 were considered. These implications have been shown to be co-incident with those derived in chapter one.

The application of a touchstone approach to theory development to the two sets of implications derived from the application of

- (i) a touchstone approach to theory development, and
  - (ii) Kelly's Personal Construct Theory (1955)
- to constituent problems P1 to P4 demonstrates that these two sets of implications are co-incident, and therefore form a theoretical and procedural basis for the development, conduct and evaluation of the teacher

development programme; that is, theses A1, A2, A3, A4 and B have been established.

That is,

A1 That each of

- (i) a touchstone approach to theory development, and
- (ii) Kelly's Personal Construct Theory (1955) have co-incident implications for the problem (P1) of planning and conducting the teacher development programme.

A2 That each of

- (i) a touchstone approach to theory development, and
- (ii) Kelly's Personal Construct Theory (1953) have co-incident implications for the problem (P2) of developing reading units for the teacher development programme.

A3 That each of

- (i) a touchstone approach to theory development, and
- (ii) Kelly's Personal Construct Theory (1955) have co-incident implications for the problem (P3) of monitoring the changes in the intelligibility of participant's descriptions of effective teaching and learning.

A4 That each of

- (i) a touchstone approach to theory development, and
- (ii) Kelly's Personal Construct Theory (1955) have co-incident implications for the problem (P4) of evaluating the effectiveness of the teacher development programme.

B That applying a touchstone approach to theory development to the two sets of implications, derived from the application of

(i) a touchstone approach to theory development, and

(ii) Kelly's Personal Construct Theory (1955) to consistent problems P1 to P4, yields a theoretical and procedural basis for the planning, conduct and evaluation of the teacher development programme, and, in particular, for

(a) planning and conducting the teacher development programme (P1);

(b) developing a reading programme for the teacher development programme (P2);

(c) monitoring changes in the intelligibility of the descriptions of effective teaching and learning given by participants during the teacher development programme (P3);

(d) evaluating the teacher development programme (P4)

That is, thesis B has been established.

In Chapter 3, the development of reading units for the teacher development programme, according to the implications developed in Chapter 2, for thesis A2 was described and illustrated.

In Chapter 4, the conduct of the teacher development programme, according to the implications for thesis A1 as developed in chapter 2, has been described.

#### Thesis C

In chapter five, an evaluation of the effectiveness of the teacher development programme in

meeting its individual and group purposes was undertaken. This evaluation demonstrated that the programme was highly successful in meeting individual purposes for the participants. That is, the programme was considered, by the participants, to be very effective in developing each participant's capacity to

- (i) recognise and describe;
- (ii) explore;
- (iii) review;
- (iv) revise and clarify;

alternative frames of reference, which they may use to describe effective teaching and learning.

Similarly, the participants considered the programme to be slightly less effective in developing their individual capacities to

- (i) communicate;
- (ii) share;
- (iii) negotiate;

these frames of reference with other participants.

That is, thesis C1 has been strongly supported.

In chapter 6, an evaluation of the effectiveness of the programme in meeting its general purposes was conducted. The evaluation of its effectiveness in monitoring and assessing the intelligibility of programme participant's descriptions of effective teaching and learning throughout the programme was completed using three case studies.

The three case studies completed demonstrated that the procedures developed in Chapter 2, involving the analysis and interpretation of repertory grids, could be used to monitor

- (i) the co-referencing of descriptions of effective teaching and learning;
- (ii) the logical consistency of the various semantic units, or elements, of this description and
- (iii) the plausibility of this description in terms of the consistency of its interpretation, effectively.

In chapter 2, it was argued that co-referencing, logical consistency and plausibility are primary contributing, but not necessarily fully determining, factors for the intelligibility of such descriptions. Within this limitation, it has been demonstrated, in chapter 6, that the procedures developed are effective in monitoring and assessing the changes in the intelligibility of the descriptions of effective teaching and learning given by the participants throughout the teacher development programme. That is, theses C2 (a) has been established, namely:

C2 (a) That changes in the intelligibility of the programme participants' descriptions of effective teaching and learning can be monitored and assessed effectively using repertory grid analysis and interpretations.

Of the three case studies, only case A showed an enhancement of descriptive intelligibility. Cases C and B indicated that any further enhancement of descriptive intelligibility depended upon teachers C and B resolving conflicts in their perceptions of effective teaching and learning. Thesis C2 (b) was, therefore, not established. That is, participation of teachers in the programme did not necessarily enhance descriptive intelligibility.

### Thesis D

#### (a) Recommendation for future programmes

The planning, conduct and reading content of the programme was evaluated in Chapter 7.

Difficulties experienced by the participants during the programme include those associated with:

- (i) Developing and interpreting repertory grids;
- (ii) Understanding some of the language of the programme readings;
- (iii) Sustaining involvement between programme periods;
- (iv) Being aware of personal progress during the programme;
- (v) Coping with the very high work load of the programme.

For future programmes attention would, therefore, need to be given to the following participant's suggestions:

- (i) Providing additional tutorial sessions;
- (ii) Regularizing, and reducing, the periods between the three programme sessions;
- (iii) Providing initial examples of the development, analysis and interpretation of repertory grids;
- (iv) Developing procedures for informing participants of their progress during the course;
- (v) Clarifying the language and terminology used in the programme readings;
- (vi) Reducing the programme work load, and sustaining interest in it between teaching periods.

#### (b) A general approach to teacher development programmes

If the interaction of teacher, curriculum and organisational development is assumed, the investigation of a problem in any of these areas can be



undertaken in terms of the influence of the changes in one or both of the other two areas on the problem. Thus a problem in teaching and learning can be investigated by considering the influence of changes in the curriculum and/or the organisation sponsoring the curriculum and its teaching. An organisational problem, such as effective decision making in a school could be studied in terms of the influence changes in the curriculum of that school have on it. In this study, the problem is describing effective teaching and learning, and this was studied by considering the influence of changes in the approach to curriculum development on it.

Let A denote any activity in an educational organisation, which is directed towards meeting the purposes of that organisation. Of central interest to those within the organisation, who are associated with that activity, is its effectiveness in meeting its stated purposes. Thus, the interest in a school in activities such as teaching and learning, decision-making and student counselling, for example, is in the effectiveness of each of these activities in meeting school purposes. Such activities are linked with teacher development, curriculum development and organisational development.

Given the interaction of these aspects of any educational organisation, the problem of describing effective A (decision-making, teaching, learning, student counselling, budget policy development, etc.) can be studied in a similar way to that used in this study for the problem of describing effective teaching and learning; that is by using a teacher development programme focused on the problem of describing effective A.

In this case, the purposes of the teacher development programme would be the same as those given in the introduction of this study, section C (1), and the procedures for planning and conducting the programme would be similar to those described in chapter 4. These procedures would have the procedural and theoretical basis developed in chapters 1 and 2.

The reading content for the programme could be drawn from any one of the areas of curriculum development, teaching development or organisational development. The reading would be developed, as in chapter 3, to emphasise alternative educational perspectives.

As for this study, the procedures developed for monitoring and assessing the changes in the intelligibility of participant descriptions of effective teaching and learning, as illustrated in chapter 6, may be applied to the problem of describing effective A.

The effectiveness of such a programme in meeting its stated purposes for its participants can be evaluated using the procedures described, and illustrated, in chapter 5 of this study.

Thus the problem of describing effective A can be studied using a teacher development programme similar to that described in this study, using the same procedures to:

- (1) Plan and conduct the programme (P1);
- (2) Develop the reading content for the programme (P2);

- (3) Monitor and assess the changes in intelligibility of the participants' descriptions of effective A (P3);
- (4) Evaluate the programme (P4).

Thus thesis D has been established. That is, the procedures developed for the planning, conduct and evaluation of this teacher development programme can be used as a general approach to planning, conducting and evaluating teacher development programmes provided that the purposes for participants in the programme are as given in the Introduction, section C(1), and the problem to be investigated by the participants is of the form "describing effective A", where A is a purposeful phenomenon of an educational organisation.

In using this approach

- (i) the modifications suggested above would need to be considered, and
- (ii) the intelligibility of the participant's descriptions of effective A can be monitored and assessed in terms of their co-referencing, consistency and plausibility, but will not necessarily be enhanced. The procedures embodied within this approach do, however, facilitate the systematic study of factors influencing this intelligibility, and hence provide a basis for designing further programmes for its enhancement.

This general approach to teacher development may be summarized as follows:-

A Touchstone Approach to Teacher Development

1. Purposes of the programme

(i) Individual teacher purposes

These purposes are to enhance each participant's capacities to describe, intelligibly, effective A by developing their capacities to:

- (i) recognise and describe,
- (ii) explore;
- (iii) review;
- (iv) revise and clarify alternative frames of reference, which they may use to describe effective A.

#### (ii) Group purposes

These purposes are to enhance each participant's capacities to describe, intelligibly, effective A by developing their capacities to:

- (i) communicate;
- (ii) share;
- (iii) negotiate these frames of reference with other programme participants.

#### (iii) General Purposes

- (a) To monitor and assess changes in the intelligibility of the participant's descriptions of effective throughout the teacher development programme, effectively.
- (b) To enhance the intelligibility of the participant's descriptions of effective through their participation in the teacher development programme.

## 2. Theoretical assumptions

This approach assumes:

- (i) A coherentist (holistic) epistemology;
- (ii) A touchstone approach to theory development;
- (iii) Kelly's Personal Construct Theory (1955)

These assumptions enable the reciprocal, rather than inferential, dependence between competing educational theories to be studied.

### 3. The Problem to be studied

The problem to be investigated by the programme participants is describing effective A, where A is any purposeful activity within an educational organisation.

### 4. Constituent problems for the teacher development programme

The problem of planning, conducting and evaluating the teacher development programme is to be considered in terms of the following constituent problems:

P1: The problem of planning and conducting the teacher development programme:

P2: The problem of developing a reading programme for this programme;

P3: The problem of monitoring and assessing the changes in the intelligibility of the descriptions of effective A by the participants;

P4: The problem of evaluating the effectiveness of the teacher development programme.

### 5. The planning, conduct and evaluation of the programme

(i) The theoretical and procedural basis for planning and conducting the programme is as described in chapter 1, 2 and 4 of this study.

(ii) The procedures for developing the reading programme are as described in chapter 3, together with the modifications suggested in chapter 7.

(iii) The procedures for evaluating the programme in terms of its individual and group purposes is as described in chapter 5.

(iv) The procedures for evaluating the programme in terms of its general purposes is as described in

chapter 6, together with the modifications suggested in chapter 7.

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APPENDICES

- A. Enrollees in the teacher development programme.
- B. Background information on participants in the programme.
- C. Forms for repertory grid analysis.
- D. Reading guide.
- E. Letter to participants.
- F. Group membership.
- G. Handbook for the development of repertory grids.
- H. Reading units for the teacher development programme.

APPENDIX AEnrollees in the teacher development programme

The following students enrolled in the programme

NAME	ADDRESS	SCHOOL
BLACKABY, Mr Paul Raymond	13 Oldham Avenue New Town, 7008, Ph. : 28 4296	Goulburn Street Primary
BIRD, Mrs Margaret Josephine	P.O. Box 75 Rosny Park, 7018 Ph. : 62 2462	Springfield Gardens Primary
BREEN, Mr Dennis John	10 Jennings Street Bellerive, 7018 Oh. : 44 5653	Sorell District High
CLARKSON, Mr Michael James	9 Toorak Avenue Lenah Valley, 7008 Ph. : 28 6128 No. relief.	Bridgewater High
HILL, Mr James Livingston	1 Highfield Street West Moonah, 7009 Ph. : 28 3513	Claremont High
JOHNSTON, Mr Mark Stephen	3 Melane Road Old Beach, 7017 Ph. : 49 5799	Claremont High
KURL, Ms Kathleen	28 Sanders Street Glenorchy, 7010 Ph. 72 3793	Sorell District
MORHRING, Miss Sigrid Else	Flat 2, Mawhera Av Sandy Bay, 7005 Ph. : 25 1096	Taroona High
MORGAN, Mr Donald Ray	38 Lewis Avenue Seven Mile Beach, 7170, Ph. : 48 6207	Rokeby High
OSBORNE, Mr Peter John	42 Continental Road Glenorchy, 7010 Ph. : 72 6428	Clarendon Vale Primary



PARRY, Mr William Stephen	4 Banksia Court Burnie, 7320 Ph. : 31 2224 No relief.	Burnie Technical College
SUGDEN, Mr Michael James	33A Kingston Heights Kingston Beach, 7150 Ph. : 29 8132	Rosny College
TURNBULL, Mrs Cynthia Jill	59 Oakleigh Avenue Taroonna, 7006 Ph. : 27 8132	Royal Hobart Hospital
WEBB, Mr Peter Hedley	18 Trevatt Court Lutana, 7009 Ph. : 28 6717 (AH) No relief.	New Town Primary
WILLIAMS. Mr Dallas	7 Roland Court Sheffield, 7306	Sheffield District

APPENDIX BBackground information on programme participantsPersonal Information

Name : Mr, Mrs, Ms, Miss \_\_\_\_\_  
Given Name SURNAME

School Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Postcode \_\_\_\_\_  
Telephone \_\_\_\_\_

Private Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Postcode \_\_\_\_\_  
Telephone \_\_\_\_\_

A. Background information

1. What is your area of initial teacher training?

☐ Early childhood (Infant)  
(Ages 3-8)☐ Primary (Grades 3-6)  
(Ages 8-12)☐ SecondaryIf secondary, please indicate in which subject areas  
you were trained.

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2. In which type of institution were you initially  
trained?☐ Teachers College☐ College of Advanced Education☐ University☐ College of Further Education☐ Other - please specify 

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3. What was your period of initial training?

<input type="checkbox"/>	Less than 2 years
<input type="checkbox"/>	2 years
<input type="checkbox"/>	3 years
<input type="checkbox"/>	4 years
<input type="checkbox"/>	More than 4 years

4. Do you hold either a TTC or TIC (of TTC or TIC status)?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

5. How many years of teaching have you competed, including 1986?

<input type="checkbox"/>	None
<input type="checkbox"/>	1 - 5
<input type="checkbox"/>	6 - 10
<input type="checkbox"/>	11 - 20
<input type="checkbox"/>	21 - 30
<input type="checkbox"/>	over 30

6. At the time of completing this questionnaire, what is your status within your school or college?

☐ teacher  
☐ senior master/senior teacher/head teacher  
☐ infant mistress/vice-principal/head of school  
☐ principal  
☐ other, please specify \_\_\_\_\_

---

7. Do you hold a Diploma of Teaching?

☐ Yes  
☐ No  
☐ Currently studying for

8. Do you hold a three or four year university degree?

☐ Yes  
☐ No  
☐ Currently studying for

9. Do you hold a Diploma of Education?

☐ Yes  
☐ No  
☐ Currently studying for

10. Do you hold a Bachelor of Education degree?

☐ Yes

☐ No

☐ Currently studying for

11. Do you hold a Master of Education (or Educational Studies) degree?

☐ Yes

☐ No

☐ Currently studying for

12. Do you hold the degree of Doctor of Philosophy?

☐ Yes

☐ No

☐ Currently studying for

13. What level of responsibility do you accept for planning what is to be taught to the class you teach?

☐ Total responsibility with no supervision.

☐ Major responsibility under supervision of a senior member of staff.

☐ Minor responsibility with substantial direction from a senior member of staff.

☐ Responsible only for planning my own lessons within very specific guidelines.

☐ Everything is planned for me.

APPENDIX C

FORMS FOR REPERTORY GRID ANALYSIS

Form 1

## REPERTORY GRID FOR EFFECTIVE TEACHING AND LEARNING

ELEMENTS

Element	
A.	
B.	
C.	
D.	
E.	
F.	
G.	
H.	
I.	
J.	



Form 2

## REPERTORY GRID FOR EFFECTIVE TEACHING AND LEARNING

## BI-POLAR STATEMENTS (Constructs)

Construct	Bi-polar Statements	
	Initial Pole	Emergent Pole
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Form 3

REPERTORY GRID FOR EFFECTIVE TEACHING AND LEARNING  
NEGOTIATED BI-POLAR STATEMENTS (Constructs)

Construct	Initial Pole	Emergent Pole
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		



Form 5

## CORRELATION MATRICES FOR REPERTORY GRIDS

[illegible][illegible]

Form 6

INTERPRETATION OF REPERTORY GRID

## APPENDIX D

### A suggested guide to reading

The emphasis of the course is on the way teachers construe their experience of teaching and learning. The readings given for the course should, as well as proposing and arguing a range of viewpoints concerning curriculum planning and development, provide a range of alternative frames of reference through which the experience of teaching (and learning) may be construed.

Two approaches to reading are suggested. The first is based upon Kelly's Personal Construct Theory and the procedures for developing repertory grids, whilst the second uses the repertory grid on effective teaching and learning, which has been already developed, as a basis of an approach using a set of key questions relating to educating, teaching and learning.

#### 1. Repertory Grid Approach

Kelly's Personal Construct Theory, and his subsequent view of man as a personal scientist, may be used as the basis for an approach to reading which supports this emphasis. The application of this theory depends upon both elements and constructs being elicited for the particular field of study. Analysis of possible relationships between elements and constructs may then be undertaken using repertory grid techniques. These procedures of elicitation and analysis may be applied to a given reading as a field of study.

For each reading it will be firstly necessary to elicit a set of elements. This set must represent adequately the full range of arguments advanced in the reading. That is, a coherent summary of the essential arguments of the reading must be made. This summary forms the basis for eliciting elements.

To develop this summary, it may help to begin by considering the structure of the reading. If, for example, it is presented in clearly differentiated sections, then it may be advisable to summarize each section separately. These summaries may then be consolidated to give a full summary of the article. If it is not sectionalized, it may be helpful to consider separately each paragraph. In this case the integration of the essential arguments of each paragraph will lead to a final summary. These procedures should enable the writing of a coherent and succinct summary of the arguments used in the reading.

This summary must be used for eliciting elements. For this purpose, it must be written as a logically connected series of grammatically-simple sentences.

(For later ease of analysis, it is preferable that not more than ten (10) such sentences be used.) These sentences are examined for overlap or inconsistency. The final set of sentences form the set of elements which represent the reading being studied.

The elements should now be listed. A diad or triad method may now be used to elicit constructs. Such constructs should indicate the frames of reference being used by the author to reflect on the particular issues on educating and teaching being addressed in the reading. A sufficient set of constructs should be

elicited to represent fully the frames of reference being used.

The sets of elements and constructs form a repertory grid. Analyses, such as a correlation analysis of elements and constructs, may now be completed. These will indicate the relationships within both the elements and constructs, and between elements and constructs. In this way a focused grid may be produced.

The focused grid may be used as a basis for interpreting the reading being studied. It will assist in considering the frames of reference being used, the assumptions which may underlie them, and the consequences of using other frames of reference. The emphasis is on how we think about teaching and learning, what alternative ways are there, and what are the consequences for curriculum development and delivery of adopting differing frames of reference.

## 2. Key Questions Approach

A second approach is to consider the reading using a set of key questions. The repertory grid on effective teaching and learning may be used to generate these questions. On this basis each class member proposes a set of general questions relating to teaching and learning. These are shared with the class members, and an agreed set of key questions is negotiated.

Such a set may include questions such as what assumptions does the author appear to make about:

- (i) the conditions for effective learning;



- (ii) the motivation of students to learn;
- (iii) the conditions of effective teaching;
- (iv) the purposes for educating;
- (v) the types, and nature, of knowledge that the students should acquire;
- (vi) the organisation of the curriculum;
- (vii) the teaching resources available;
- (viii) social expectations for the students?

Moreover, what are the key principles and concepts which the author uses in discussing teaching and learning? Are contrasting concepts such as "intrinsic" and "extrinsic" with respect to student motivation, for example, being used? If so, what are these pairs of contrasting concepts? What would be the author's guidelines for effective teaching and learning, and what principles would be adopted in planning and developing curricula?

By considering these questions in relation to a particular article, additional questions will be generated. These questions should be noted for later application to other readings. In this way an inventory of key questions can be established.

The range of possible answers obtained by applying this inventory of questions to a paper may be used to examine difference perspectives of educating, teaching and learning. The frames of reference, which these perspectives imply, reflect the various ways we are

able to think about our own experience of teaching, and that of the students we teach. This course will emphasise gaining further insights into these ways of thinking as being fundamental to planning and implementing curriculum initiatives.

### 3. Summary

Whichever approach is used, the emphasis should be on gaining further insights into the frames of reference we use to construe experiences of teaching and learning. For each reading, a summary of such insights should be produced. Each of these should be included in the Professional Journal, and, at a later stage, should be integrated with insights gained from other related readings.

## APPENDIX E

### Description of focus class

Prior to the commencement of this course of study each student had been asked to select and describe a focus class. This request was made through the following letter :

Dear

#### Curriculum Management and Delivery

Welcome to the course. I hope that you enjoy it and find it professionally and personally worthwhile. The course will be held at the Southern Teachers Centre and will commence at 10.00 a.m. on Tuesday, 10 June, 1986.

The course focuses on curriculum management and delivery. That is, it is concerned with the curriculum, how it is organised and managed, and how it is taught to the students. The course is divided into three teaching modules, each one being of approximately one week or 25 hours teaching duration. These modules are :

Module A: Curriculum development and different perspectives of teachers and learning.

Module B: Approaches to curriculum development.

Module C: Curriculum development, knowledge and teaching.

The main purpose of the course will be to present teachers with a range of alternative ways in which they

can construe their experience of teaching and learning. In doing so, teachers will come to recognize the frames of reference they currently use to think about their experience of teaching and learning, to explore alternative frames, to share these frames with others and to negotiate, review and revise them in the light of continuing experience.

#### Selecting a focus class

To help focus the study you do in this course on your experience as a teacher you are asked to select a focus class. This will preferably be a class, or group of students, you are currently teaching and will continue to teach for the remainder of this year. If you do not have a such class at the moment then it is preferable to select a class, or group, recently taught by you and for which you have reasonable clear recollection of your experiences in teaching this class or group.

#### Describing approaches to teaching and learning

Having selected this class, I would like you to describe the approaches you take to teaching this class and for ensuring learning takes place. These approaches should refer to the total teaching programme for the year as taught by you during 1986 and not to any specific part of the programme.

In describing these approaches you should consider such questions as :

What are the priorities to be considered when planning to teach this class?

What are the conditions under which students in the class learn most effectively?

What are the main difficulties, if any, in teaching this class?

What are the characteristics of the students which markedly effect the way the class is taught?

What are the best teaching strategies for motivating the class?

What parts of the programme do you teach most effectively and why?

What parts (aspects) of the programme do the students learn most easily and why?

These are clearly other questions relating to effective teaching and learning for your focus class which could be asked. The purpose in asking these and other questions is to use your answers to them to provide a basis for describing the approaches to teaching and learning taken by you in endeavouring to ensure its effectiveness for your focus class.

#### Stating guidelines for effective teaching and learning

You are then asked to use this description to help state as clearly as possible the guidelines for effective teaching and learning to take place in your focus class. These guidelines should be expressed as a series of grammatically simple single sentences. You are asked to cover the guidelines for your focus class for the total teaching programme for the year in not

less than six (6) and not more than ten (10) such statements.

Each of these statements should then be considered in relation to the other statements in order to reduce, as far as possible, any overlap in the content of the statements.

You are then asked to rank the statements in order of importance for the focus class and the programme you teach.

It would be most helpful if you could, by the commencement of the first week of the course, have at least a preliminary statement of your set of guidelines for effective teaching and learning.

If you have any queries or difficulties with respect to what needs to be done before the course commences please contact me (002) 20 2571.

With kinds regards,

Yours sincerely,

Bevis Yaxley,  
Senior Lecturer in Education.

APPENDIX FGroup MembershipWeek 1 (days 1-4)

Group	A	B	C	D
	Mr Blackaby(P)	Mr Clarkson(S)	Miss Mohring(S)	Mr Hill(S)
	Mr Breen(S)	Mr Osbourne(P)	Mr Williams(S)	Mrs Keogh(S)
	Mr Turnbull(F)	Mr Morgan(S)	Mr Webb(P)	Mr Perry(F)
	Mr Johnston(S)	Mr Sugden(F)	Mrs Bird(P)	Mr Donovan(P)

Week 2 (days 5-9)

Group	A	B	C	D
	Mr Blackaby(P)	Mr Breen(S)	Mrs Turnbull(F)	Mr Johnston(S)
	Mr Clarkson(S)	Mr Osborne(P)	Mr Morgan(S)	Mr Sugden(F)
	Miss Mohring(S)		Mr Perry(F)	Mrs Bird(P)
	Mr Hill(S)	Mr Williams(S)	Miss Keogh(S)	Mr Donovan(P)

Week 3 (days 10-14)

Group	A	B	C	D
	Mr Blackaby(P)	Mr Osborne(P)	Mr Webb(P)	Mr Donovan(P)
	Mr Sugden(F)	Mr Johnston(S)	Mr Perry(F)	MissMohring(S)
	Miss Bird(P)	Mrs Turnbull(F)	Mrs Keogh(S)	Mr Brown(S)
	Mr Morgan(S)	Mr Hill(S)	Mr Clarkson(S)	Mr Williams(S)



APPENDIX GREPERTORY GRID TECHNIQUES

A manual for use by teachers in thinking about teaching.

### CONTENTS

1. Introduction.
2. Developing a repertory grid.
  - (i) Elements and constructs.
  - (ii) A preliminary exercise.
  - (iii) Procedure for eliciting a repertory grid.
  - (iv) Developing a topic with a group of teachers.
3. Analysing the repertory grid.
4. Bibliography.

1.

1. Introduction

This manual has been prepared for use by teachers. It is based upon the development of repertory grids. The analysis of data made available by these grids can yield significant insights into how a teacher construes their personal experience of teaching. Such insights are a basis for reviewing and revising teaching methods.

Repertory grids have their theoretical basis in Personal Construct Theories. Such theories have been developed from the original work of George A. Kelly. In 1955 Kelly published The Psychology of Personal Constructs, Volumes 1 and 2, detailing comprehensive proposals relating to the construing of significant meanings by individuals. These proposals reflect a view of "man as a personal scientist".

It is not the purpose of this booklet to give a full account of the theoretical bases of repertory grids. For such accounts the reader is referred to the bibliography given as an appendix to this manual. The aim is to help teachers review and revise their approaches to teaching by providing practical guidance in the development and analysis of repertory grids focused on teaching.

## 2. Developing a repertory grid

### (i) Elements and constructs

The problem or issue to be investigated is represented by a set of elements. From these elements a set of constructs is elicited. The grid is a matrix formed from these elements and constructs.

The elements in the grid are always items of personal experience. As such they can be used to elicit constructs for the grid. The relevance of the grid to the purpose for which it is being used will depend upon the types of elements it contains. The best set of elements are those which enable the person to more fully explore their own patterns of thoughts and feelings, as these relate to his or her purposes.

A personal construct may be seen as a dimension of personal meaning and the system of personal constructs defines a person's psychological space. The structure of personal meaning within which the items of experience acquire their significance, one in relation to the other, defines this space. If two items of experience are thought or felt to be similar, then they lie close to one another in the personal construct system. The use of words such as 'space', structure and 'lie close' indicate that the idea of a system of personal constructs is closely analogous with that of physical space. This analogy must be recognized and retained only

as long as it is helpful in investigating personal meaning.

(ii) A preliminary exercise

The following exercise will be helpful in gaining an initial understanding of how a repertory grid is developed.

Think of six people who you have recently taught. Obtain six cards of say 10 cm x 6 cm. Using these cards write one of your learners' names on each of the six cards. Shuffle them and label them E1 to E6.

Deal out cards E1, E2 and E3 and consider each of the learners named by these cards in turn. Try to imagine yourself in a learning/teaching situation with each of them in turn. Now think about them as learners. Which two of the three are most alike as learners, and which one is most different as a learner from the other two? Put the two 'similar learners' together and separate the card for the 'different learner' from this pair.

On paper write a brief description of what it is about the pair which leads you to put them together. Label this C1 P1 (Construct 1, pole 1). When you have done this write a brief description, on a second piece of paper, of what it is about the third person that makes them different as a learner. Label this C1 P2.

Put CP1, CP2 and cards E1, E2 and E3 aside. Deal out E4, E5 and E6 and repeat the procedure. This procedure will then yield C2, P1 and C2 P2.

Repeat the procedure using the triads of cards such as E1, E3 and E5, and E2, E4 and E6 thus generating C3 P1 and C3 P2, C4 P1 and C4, P2, C5 P1 and C5 P2, and C6 P1 and C6 P2. These construct cards should then be displayed as follows:

C1 P1	-	C1 P2
C2 P1	-	C2 P2
C3 P1	-	C3 P2
C4 P1	-	C4 P2
C5 P1	-	C5 P2
C6 P1	-	C6 P2

These construct cards display ways you think and feel about learners. The constructs so obtained and the elements they refer to form the matrix of a repertory grid. This matrix may be displayed as in figure 1 on page 5.

For the first construct (C1 P2 - C1 P2) consider each element E1 - E6 in turn. Each element is assigned to one pole or other of the construct. Thus if E1 is considered to most nearly fit C1 P1 then this element is assigned to this pole of the first construct. Assignment to the first (emergent) pole, C1 P1, is indicated by a tick (✓), whilst assignment to the second (implicit) pole, C1 P2, is shown by a cross (X). In this way all

elements E1 - E6 are assigned to one or other pole of the first construct giving the following typical pattern:

	E1	E2	E3	E4	E5	E6
C1P1	✓	✓	X	✓	X	X
C1P2						

The remaining constructs are similarly assigned to each of the elements enabling the following grid to be completed.

	E1	E2	E3	E4	E5	E6
C1P1						C1P2
C2P1						C2P2
C3P1						C3P2
C4P1						C4P2
C5P1						C5P2
C6P1						C6P2

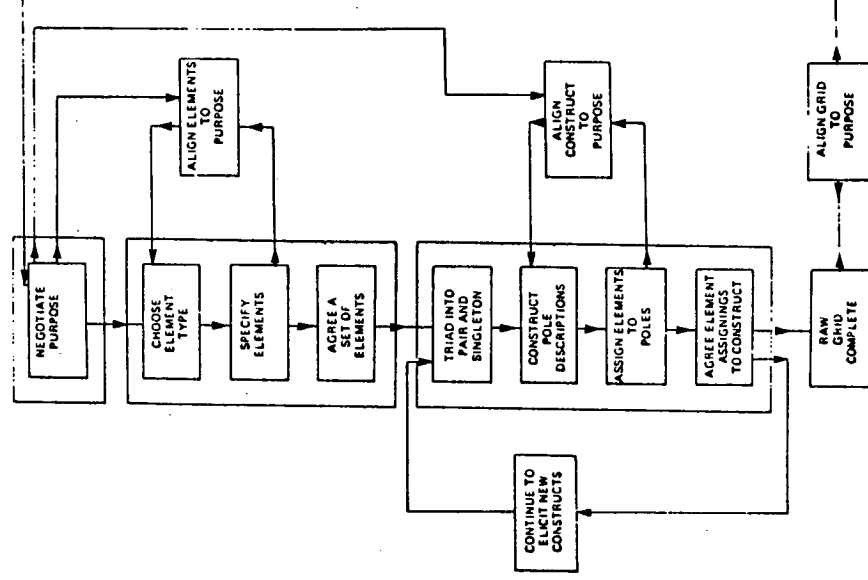
(iii) Procedure for eliciting a repertory grid

In this example the steps taken to elicit the repertory grid agree with those proposed by Thomas and Harri-Augstein (1985). These are:

1. Decide upon the purpose of the grid.
2. Identify the types of 'elements' which best allow this purpose to be achieved.
3. Elicit the elements.
4. Elicit a personal construct.
5. Assign the elements to the construct.

6. Elicit further constructs and assign the elements to them.

The entire procedure for eliciting a repertory grid has been summarized in algorithmic form by Thomas and Harri-Augstein (1985) as follows:





(iv) Developing a topic with a group of teachers

Much of educational decision-making depends upon groups of teachers exploring the way they think and feel about particular educational issues. The following procedure may be helpful in this exploration. It is perhaps best illustrated by an example.

(i) Prepare a set of "Items of Experience"

A group of teachers is meeting for a seminar/workshop on "The skills of teaching". They are firstly asked individually to prepare for the workshop by listing all the different~~te~~ teaching methods they use.

(ii) Elicit constructs

Each teacher is then asked to consider these methods and to use a triad method<sup>9</sup> as explained earlier in this manual) for eliciting some personal constructs for the set of methods listed. They are then asked to consider those constructs which are crucial in identifying similarities and differences between the methods. These may include, for instance, the construct formal/informal.

(iii) Categorize construct poles

These crucial constructs are considered and the categories to which their poles belong identified. It may, for example, be found that one set of poles refers to "conditions for effective student

learning" whilst another set may be categorized as "procedures for organising learning".

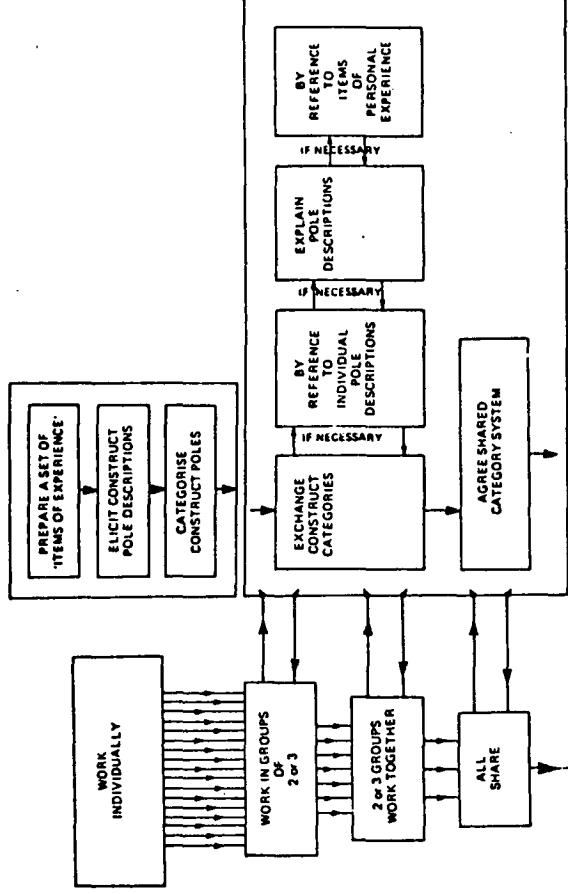
(iv) Exchange construct categories

Each teacher will have prepared a set of such categories. These are now shared with the group. This may be accomplished by using a variety of grouping within the group prior to sharing with the whole group.

(v) Agree on a shared category system

The purpose of the above sharing is for the group to come to an agreement on the set of categories for giving an initial description of the items of experience, in this case teaching methods. The development of this category system is necessary if the total field of teaching methods is to be validly represented by the set of elements (teaching methods) chosen.

These procedures are given in algorithmic form by Thomas and Harri-Augstein (1985) as follows:

Developing a topic

Having decided upon the elements to be considered the same procedure as before is used to develop and complete the repertory grid.

### 3. Analysing the repertory grid

A range of procedures is available for this analyses. For the purposes of this manual a correlation analysis based upon matching pairs of columns or rows will be described. With this procedure a correlation matrix is completed for the elements and a further \*mtxi is developed for the constructs.

The repertory grid when completed gives a matrix of ticks ( ) and crosses (X). This matrix may be displayed as in Form A.

For elements A and B count the number of occasions when the assignments ( or X) match for the

various constructs. In the attached example there are 4 instances of this matching. This number is then entered in the A/B space for the correlation matrix of elements of Form B. This procedure is repeated until all pairings of elements has been exhausted.

The same procedure is then repeated for the constructs and the correlation matrix of Form B completed.

REPERTORY GRID

Construct		Elements (Statements)										Construct	
		A	B	C	D	E	F	G	H	I	J		
1.		✓	✗	✓	✓	✗	✓	✗	✗	✓	✗		
2.		✓	✓	✓	✗	✗	✓	✓	✓	✗	✓		
3.		✗	✓	✗	✓	✓	✗	✗	✗	✗	✓		
4.		✗	✗	✓	✗	✓	✓	✓	✗	✓	✗		
5.		✓	✗	✓	✓	✓	✗	✗	✗	✓	✗		
6.		✗	✓	✗	✗	✗	✓	✗	✗	✗	✓		
7.		✓	✓	✗	✓	✗	✓	✓	✗	✓	✗		
8.		✓	✗	✓	✗	✗	✓	✓	✓	✗	✗		
9.		✗	✓	✗	✓	✓	✓	✗	✗	✗	✓		
10.		✓	✓	✓	✗	✓	✗	✗	✓	✗	✗		



These matrices give an indication of the pairs of elements and pairs of constructs which are closely related. An inspection of Form B indicates, for example, a high correlation between elements A and C and constructs 3 and 4.

A procedure designed to re-order the grid to focus on such correlation was developed by Thomas et al at the Centre for the Study of Human Learning at Brunel University. This procedure consists of the following steps:

(i) The correlation matrix for the elements is inspected and the pairs of elements which have the highest correlation identified.

(ii) Cut up to grid into its component columns making sure that each column is headed with the name of the element.

(iii) Align the strips with the highest match. Continue until the elements are re-ordered placing elements with similar ratings next to one another.

(iv) Re-write the re-ordered grid.

(v) Re-write the re-ordered grid, with the ratings of each construct reversed. This is done because, since constructs are bi-polar, it is possible that a high degree of match may be obtained if the construct was reversed.

(vi) Inspect the grid to determine the pairs of constructs which have a high match.

(vii) Cut the grid into rows, and align the rows with the highest match.

(ix) Re-write the grid.

The total pattern of relationships should now be clearer.



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APPENDIX H

READING UNITS FOR THE TEACHER DEVELOPMENT PROGRAMME

### B3: Intellectual Development and Forms of Knowledge

Hirst equates, logically, the development of the mind with a liberal education, and intellectual development as the development of knowledge and understanding. In this context, the concept of development requires clarification.

Nagel (1957) proposes three criteria for a concept of development. These are:

- (i) that any notion of development logically entails a pre-existing structure which defines the categories, and the relationships of these categories, in terms of which development is to proceed;
- (ii) that within the development which takes place there are processes which either "unfold", or are assisted by the influence of outside agencies, and
- (iii) that there are, at least implied, end-points for the development.

On this basis, intellectual development, and, therefore, liberal education, would require a pre-existing mental structure, intellectual processes which either unfold naturally or are stimulated by external influences, and the notion of an end-point, presumably rational man, for this development. This development would be seen by Hirst in terms of the Forms of Knowledge, and as logical rather than psychological. Hence pre-existing mental structures are denied. That is, development of the mind in purely psychological terms is rejected, and any mental powers or intellectual skills which are developed are restricted to those developed within each particular Form of Knowledge. Again, these skills are seen as being fundamentally different in kind, and as characteristic of the Forms. That is, the structure of the mind is

constituted by the logical structure of the Forms of Knowledge.

... he admits that the skills used in different Forms of Knowledge may perhaps have something in common, but asserts that is a matter of no importance since the rules of the Forms are different.

(Brown, 1975: 50)

Hence the public Forms of Knowledge are logically prior to the powers of the mind.

In a major attack on this position, Elliott (1975) suggests that Hirst does not address the fundamental question as to what counts for a person having a full-developed understanding. He subsequently proposes that for understanding to be considered fully-developed:

(i) It must be perfect in the sense that it is true, correct or valid, i.e. it is not a misunderstanding.

(ii) It is profound in that it is based on fundamental principles, pre-suppositions and motivations.

(iii) In not ignoring anything of significance, it is comprehensive.

(iv) It is synoptic in the sense that the understanding allows for a whole view.

(v) It is sensitive to hidden significances, delicate shifts of emphasis and nuances of expression.

(vi) It is critical in seeing weaknesses, omissions and alternatives.

(vii) It is steady in that it is not insecure or intermittent.

(viii) It is creative in being applicable to previously unexamined topics.

(ix) It enables an appropriate evaluation of the achievement of understanding.

Such understanding is to be dependent upon the use of psychological powers i.e. through an "intellectual eros". Elliott (1975) further postulates that these powers are:

- (i) retention and anticipation;
- (ii) synthesis and synopsis;
- (iii) reduction of wholes into parts;
- (iv) discernment of relations and discovery of structures;
- (v) bracketing properties and aspects;
- (vi) discovering the objects of feeling and expressions;
- (vi) sensing balance, weighing pros and cons, etc.

In summary, understanding means the successful application of mental powers, which possess a structure independent of knowledge, and are natural and not conventional. In particular, and according to Elliott (1975), the most fundamental development of the human mind is the development of mental powers, and this may occur without the systematic study of Hirst's seven Forms of Knowledge, or, indeed, any particular body, or bodies, of knowledge.

There is no good reason for thinking that logical difference must override psychological sameness, or for supposing that the differences between the Forms generate seven sets of unique mental powers.

(Brown, 1975: 51)

and, furthermore

To say, simply, that the acquisition of the Forms is the development of the mind in its most fundamental sense is to beg the question of the nature of mental development, and that of the nature of a liberal education.

(Brown, 1975: 56)

An essential difference between the positions taken by Hirst and Elliott appears to be with respect to the notion of development central to these positions. According to Elliott (1975) the concept of development is ambiguous in that there is an ambiguity between a person developing an understanding of something and developing powers of understanding.

In the first case, development must be seen in terms of an external norm. For Hirst such norms would derive specifically from each of the seven Forms of Knowledge entailing, therefore, a different notion of development for each Form.

Alternatively, development may be seen as a series of changes arising out of some antecedent state and proceeding according to some internal principle. Such development is not externally referenced, proceeds according to some internal norm, and appeals to no value other than the development itself. In contrast, development thought of as movement towards truth, or the value of whose stages is justified by reference to something other than these stages, and therefore independently of the developmental process, can be said to have an external norm of development. For Elliott, development may be seen to be on the basis of internal norms, whilst for Hirst external norms, referring to the public standards and criteria of the Forms of Knowledge, are essential. For Elliott, comprehensiveness of understanding, through the development of powers of understanding, is paramount. For Hirst, the development of understanding aimed at truth, as revealed through the objectivity of public standards derived from characteristics of the seven Forms of Knowledge, is fundamental. That is, the essence of Hirst's position is that it pre-supposes

public standards. The public Forms of Knowledge are logically prior to the powers of the mind.

Hirst thinks that the notion of truth is centrally a demand for objective judgement, and there is nothing to be gained by restricting it to one particular form of such judgement.

(Brown, 1975: 57)

But any notion of objective judgement must be linked to inter-subjective agreement. Truth is one aspect of objectivity. Knowledge, meaning and understanding are other aspects. Educational development can be considered in terms of either internal or external norms, and these involve the inter-connected notions of objectivity, truth and understanding.

The central questions raised within the section include:

1. Does intellectual development require pre-existing mental structures?
2. Do intellectual processes unfold naturally, or are they stimulated by external influences?
3. Does intellectual development imply an end-point, such as the development of rational thinking?
4. Is the development of understanding logical or psychological?
5. Are the powers of the mind independent of the structure of knowledge?
6. Does development proceed according to internal or external principles?
7. Is intellectual development aimed at the truth or at only development itself?
8. Is intellectual development aimed at comprehensiveness of understanding, or at truth as revealed through the objectivity of public standards?

9. Are the Forms of Knowledge logically prior to the powers of the mind?

The philosophical issues pertaining to these questions can be encapsulated in the form of pairs of bi-polar statements, or dichotomies. These would include, for example, the following inter-related dichotomies.

Intellectual development proceeds according to pre-existing mental structures. Intellectual development proceeds according to the structures of knowledge. Intellectual development is logical. Intellectual development is psychological. Intellectual development proceeds according to internal principles. Intellectual development proceeds according to external principles. Intellectual development is aimed at the truth as revealed through the objectivity of public standards. Intellectual development is aimed at comprehensiveness of understanding through the application of the powers of the mind.

B4: Objectivity, truth and inter-subjective Agreement

In discussing the Forms of Knowledge in "Hirst's Unruly Theory: Forms of Knowledge, truth and meaning", Smith (1981) connects objectivity, truth and inter-subjective agreement.

The underlying conditions due to the regularity of the world and the consistency and agreement in people's response to their world, constitute the background without which we would not have come to apply such concepts as truth. This is how inter-subjective agreement can be called the criterion of truth and is interwoven with concepts like knowledge and meaning.

(Smith, 1981: 20)



Smith (1981) proposes, therefore, that it is the "regularity of the world and the consistency of people's responses to the world" which is the basis of objectivity. In this, it appears to be assumed that there exists an external world and that statements about this world are known to be true through our sense experiences. Furthermore, by means of our senses we perceive the external world as it is. That is inter-subjective agreement is based upon all perceptions of the external world being the same and arising from an identical external world. The truth of propositions is determined according to correspondence with this world. Objectivity is that property of the external world defined by its constancy and regularity.

An alternative view is given by Brent (1978) who states:

What it is that gives language its meaning will provide us with our criteria for curricular solutions. The language of the curriculum - scientific, aesthetic, moral and religious - will each embody their own criteria of meaning and truth, and where we find such criteria, there we shall find our curricular activities.

(Brent, 1978: 54)

That is, Brent (1978) appears to consider that there are different types of criteria for truth, that inter-subjective agreement arises through the development and use of language, and that objectivity is that property of language defined by the consistency and regularity of its usage. For example, for Brent (1978) the Forms of Knowledge

... exist in public language with concepts, propositions and logical grammar, where the forms are both discernable and linguistically analysable by those who use them.

(Brent, 1978: 94-5)

For Hirst,

Each (Form) has distinctive tests for truth, by means of which distinctive concepts are instantiated and its distinctive properties validated,

and

Each distinctive test for truth involves skill as well as knowledge, with the result that the forms have to be learned by contact with practitioners on the job.

(Brent, 1978: 95)

Thus Brent sees the Forms

... with their objectivity resting upon linguistic inter-subjectivity and not upon any reality outside language, whether of an allegedly inescapable supersensible world or whether of an equally inescapable series of basis sensory phenomena.

(Brent, 1978: 100)

Furthermore,

Objectivity has thus arisen from forms of life which men share, revealed in their agreement to describe and conceptualize certain of their subjective experiences in common ways.

(Brent, 1978: 70)

In taking this position, Brent is in agreement with Hirst who rejects the notion that the mind has, in any sense, a pre-determined pattern of functioning. That is, objectivity is not based upon a naturalistically conceived pattern of organisation of the brain cells. Objectivity is to be based on linguistic inter-subjectivity, and this is to be embodied and expressed through the symbolic representations of the various Forms of Knowledge, and, in particular, through language.

Smith (1981) is very critical of this position.

... Hirst equates Forms of Knowledge with categories of public discourse, "language-games", or "realms of meaning", and because he is committed to the slogan that "the meaning is the use" (Hirst, 1974: 157), it is natural for him to write as if the kind of knowledge under discussion is essentially knowledge how - how, that is, to manipulate the symbols which constitute the symbol system of the various language games.

(Smith, 1981, 2-3)

That is, it is claimed that Hirst's proposals with respect to the Forms of Knowledge are fundamentally concerned with procedural knowledge of the symbol systems representing the various Forms. By contrast, Hirst claims that his proposals are concerned, basically, with propositional knowledge, the distinguishing features of which is its close connections with notions of truth. However, if Hirst's proposals are essentially concerned with learning how to play language games, a curriculum so based becomes merely a language-game and is, therefore, disconnected with any concept of truth other than that which would be associated with the correct use of language within particular games.

Thus a central point of debate, with respect to Hirst's proposals, is his position concerning the notion of objectivity. Any such notion would appear to be linked to inter-subjective agreement. The question then arises as to the nature of this agreement.

In the first instance, it may be proposed that inter-subjective agreement arises directly from a set of propositions which are universally true, i.e. true for all people in all circumstances. In this case,

objectivity is linked to those criteria by which these propositions are determined to be true. Development would be characterised by the acquisition of knowledge in terms of these propositions, and their associated criteria for truth. Objectivity would correspond to this set of synthetic a priori propositions (as determined by criteria for truth). In is concerned with propositional knowledge, and not with procedural knowledge. Hence, if the links between inter-subjective agreement, objectivity and truth are as given above, the key philosophical issues which arise include:

- (a) Are synthetic a priori statements possible? Is the analytic-synthetic distinction valid with respect to propositional knowledge, and, if so, in what senses is it valid?
- (b) Are there universal criteria for truth? Or are such criteria characteristic, for example, of each of the Forms of Knowledge, thereby proposing that objectivity, truth and development are Form-specific?
- (c) Is the separation of procedural and propositional knowledge discrete?

Alternatively, inter-subjective agreement could be based upon empirically observable constancies and regularities within the experienced world. This raises the question as to whether or not we can have direct knowledge of objects i.e. knowledge without any abstraction or referencing from the object. That is, is knowing an occurrent or dispositional state? Does to know X mean that given certain circumstances I may claim to know X, that is knowing is a dispositional state, or do I know X simply by having direct experience of it, and hence knowing is an occurrent state? Again, is there "acquaintance knowledge", which

cannot be put in propositional form, but from which propositional knowledge may arise? In this regard the validity of direct knowledge would appear to rest upon the following assumptions:

- (i) There exists a world of physical objects;
- (ii) Statements about these objects are known to be true through sense experience;
- (iii) These objects exist not only when they are perceived, but also when they are not being perceived;
- (iv) By means of our sense, we perceive the physical world as it is, our claims to have knowledge of it are justified;
- (v) The sense impressions of the physical objects are caused by the objects themselves.

All of these assumptions can be seriously questioned, and this position is to be contrasted with the alternative position usually designated as "idealism". For example, this position may be said to assume that:

- (i) No physical world exists. That is, there are no objects which exist independently of the mind. Thus, there are no independent objects to cause sense impressions;
- (ii) The words we use to designate physical objects denote recurring patterns in our senses experiences;
- (iii) "Causes" indicate the correlation of various patterns of sense experience.

Thus the inter-subjective agreement may, as in the first instance above, be rationally based or it may, as has been argued immediately above, be empirically based.

A further position, which may be taken with respect to inter-subjective agreement, is that agreement is based purely on social convention. That is, the rules for agreement are socially constructed and culturally determined. This is the relativist's position, which is exemplified by Michael F.D. Young in "An Approach to the Study of Curricula as Socially Organised Knowledge" in Young (1971). Lawton (1975) discusses Young's views in terms of five levels:

Level 1: That the present structure and organisation of education in our society serves to preserve the status quo in an unjust society - this level is particularly concerned with questions such as the social distribution of knowledge.

Level 2: That in particular the content of education - the selection of knowledge for transmission by schools - should be made into a problem for critical examination rather than taken for granted; this level is concerned with what counts for knowledge in our society, and the stratification of knowledge.

Level 3: That subject barriers are arbitrary and artificial, existing largely for the convenience of those in control of education.

Level 4: That all knowledge is socially constructed.

Level 5: That not only knowledge but rationality itself is merely a convention.

(Lawton, 1975: 58)

These statements have clear implications for the selection, and justification, of curriculum content. Specifically, if inter-subjective agreement is conventional, objectivity would have no greater status than a summation of the conventions of a particular group, and criteria for truth would be tests for determining whether or not a given statement was valid

in the sense that it fitted with the norms and conventions of the particular group. Truth would have the status of collective opinion.

According to Bolton (1979), such a phenomenological approach raises two major issues. These are:

- (a) The possibility of subjective existential truth and,
- (b) The possibility of a genuine philosophical psychology, as opposed to the current distinct disciplines of empirical psychology and philosophy of mind.

The phenomenological method attempts to combine critical philosophical and empirical analysis. In particular, it attempts to deal with the problems of psychology and constitution.

The problem of psychology is concerned with the relationship of the knower and the known. For psychology, logical rules are identical with particular mental operations. Contrary to Hume (1888), consciousness is not merely a bundle of sensations that succeed one another with "unconceivable rapidity" for

there is a perception of objects which retain their identity.

(Bolton, 1979: 248)

That is, intentional acts, such as perceiving, remarking and thinking, must be distinguished from the objects to which they refer. There is no separation between the ideal and the empirical "for man is the being that aims at the truth" (Bolton, 1979: 249). These proposals clearly raise questions as to the

nature of subjectivity and objectivity and hence to internally and externally derived perceptions. This is the problem of constitution.

This problem is exemplified by the Kantian thesis that understanding is a function of the form that the mind imposes on the world, and of the content the mind receives from the world through sensations. That is, objectivity arises when sensations are interpreted by intentions. For Hirst, objectivity does not spring from intentions, but from inter-subjective agreement with respect to the use and/or meaning of the various symbols systems, as these refer to the Forms. Again, it is not clear as to whether Hirst considers objectivity to be based upon the use of the symbol system, and in such case on procedural knowledge or knowledge how, or upon the meaning attached to the symbol systems in which case propositional knowledge or knowing that. On this basis a criticism which can be made of Hirst's proposals is that he is essentially discussing meaning rather than knowledge. This, and the implications of categorising the Forms as either propositional or procedural knowledge, will be considered in the next section. The fundamental question which remains is the nature of the inter-connectedness of inter-subjective agreement, objectivity and truth, and indeed, whether any of the perspectives discussed above adequately describes these relationships.

The central question raised in this section is what are the possible bases for objectivity, truth and inter-subjective agreement? Possible bases include correspondence with the constancy and regularity of the external world; correspondence with the constancy and regularity of the use of language; correspondence with



pre-existing patterns of mental functioning; correspondence with a set of synthetic a priori propositions; correspondence with social conventions.

Some of the philosophical issues relating to these questions can be stated in terms of dichotomies such as the following:

The basis of objectivity, truth and inter-subjective agreement is correspondence with:

The constancy and regularity of the external world.  
The constancy and regularity of the use of language;  
pre-existing patterns of mental functioning. A set of synthetic a priori statement.

Any pair of the above bases can be used to develop such a dichotomy.

B5: "Knowing how" and "Knowing that"

In discussing possible categorisations of knowledge, Hirst (1974) states:

... the phrase 'objects of knowledge' is in general taken not to cover the objects about which, or of which, we have knowledge, but the logical objects of knowledge when that state of mind is being distinguished from others.

(Hirst, 1974: 57)

He goes on to state that there are three possible sets of logical objects. These are:

- (a) People, places and things, knowing which may be referred to as 'knowledge with the direct object':
- (b) Knowing what is the case, in which what we know is expressed in terms of statements of true propositions, i.e. 'knowledge-that':

(c) Procedural knowledge in the sense of knowing how or when to do things, i.e. 'knowledge-how'.

Whilst Hirst clearly recognises the very different nature of procedural knowledge, he maintains that this difference is not of concern in discussing the Forms of Knowledge. Of procedural knowledge he says:

It may in fact always involve knowledge of both the first two kinds, but it clearly picks out certain capacities over and above the cognitive understanding and mastery of which a person is capable. In seeking to distinguish types of knowledge, these additional aspects are not being denied, but it is not these with which we are concerned.

(Hirst, 1974: 57)

Furthermore, in discussing claims for 'knowledge with the direct object' as a discrete type of knowledge distinguishable from both 'knowing-how' and 'knowing-that', as Hirst perceives Phenix's (1964) position with respect to the latter's proposals of Realms of Meaning, Hirst contends that such a distinction is based upon confusing knowledge with other states of mind such as perception, awareness and feeling. That is, knowing is a dispositional state of the mind, not an "occurrent, conscious experience or state of awareness at all" (Hirst, 1974: 57). Specifically,

What one knows in the existential form of 'knowledge with the direct object' is thus characterisable as 'knowledge-that' concerning the object on which supervenes an occurrent state of awareness which is of a quite different character. Knowledge of the first kind, I therefore suggest, is reducible to 'knowledge-that'.

(Hirst, 1974: 58)

That is, existential awareness is not to be classified as knowledge. Existential experiences, it is maintained, are only made intelligible through the use of concepts which they involve, but this does not warrant them as a type of knowledge. He concludes that, if it is knowledge other than 'knowing how' with which we are concerned, this knowledge is necessarily propositional knowledge or 'knowledge-that'. For Hirst, knowledge is uniquely divisible into two categories - procedural knowledge and propositional knowledge.

Reid (1981: 83) considers that Hirst does not believe in direct knowledge and by implication that the Forms of Knowledge are not so concerned. In opposing this view, Reid argues there can be direct knowledge of an object, but this cannot occur without conceptualisation. Specifically, it is argued that what a child apprehends are the conceptual differences in what he perceives.

The priority of (conceptually charged) direct experience to the linguistic formulation of concepts is, I think, of quite vital importance in life and education - though it implies no denial at all of the essential importance of language in the development of certain kinds of knowledge.

(Reid, 1981: 81)

Furthermore, it is proposed that

... no existing intrinsic value can be known at all without direct experience of it, experience which is both creative and affective, which involves living and active interest in it as it happens and is really existing in a particular and individual occurrence of it.

(Reid, 1981: 84-5)

What is being argued is that all knowing necessarily involves conation and feeling, that feeling and interest cannot be separated from learning and coming to know. For Hirst, "knowing" and "coming to know" are different states of the mind, whilst for Reid the separation of "knowing" and "coming to know" as either occurrent or dispositional states is to deny that

The occurrence of knowing is, indivisibly,  
the occurrence of feeling.

(Reid, 1981: 86)

In contrast, Hirst appears to wish to separate "knowing" and "coming to know" from other states of mind. His proposals with respect to the Forms of Knowledge emphasise the characteristic conceptual structures and logical relationships of each of the Forms. This emphasis, together with the corresponding development of conceptual languages for the Forms, may serve to reify those concepts distinguished, and to treat them as separate entities in themselves. That is, it could be argued that this process has lead to the establishment of some concepts as basic to particular Forms, rather than other possible concepts. Thus the "basic" conceptual structures of the Forms are traditional, rather than intrinsic, to the Forms.

For Hirst, the separation of "knowing" and "coming to know", from other states of the mind, is central to his notion of objectivity. That is, the Forms of Knowledge encapsulate bodies of propositional knowledge, which are objective in that both the meaning of the proposition, and the criteria for truth employed, are not subjective in that they do not involve individual judgements, idiosyncracies or prejudices. That they are objective means essentially, that they are not subjective. A fundamental

consideration is the nature of Hirst's notion of objectivity.

In "The Concept of Mind", Harmondsworth: Penguin, 1949, Gilbert Ryle, in discussing episodic words, proposes that there is a special class or words, called "achievement words", which require attention. In particular, he distinguishes between achievement verbs and task verbs. That is, the word denoting the process of reaching towards a particular end point, the task, has to be distinguished from that denoting the achievement of that end. The task of solving a quadratic equation is distinct from the achievement of having solved it. Interestingly, achievement verbs are often borrowed to signify the performance of the corresponding task.

A runner may be described as winning his race from the start, despite the fact that he may not win it in the end; and a doctor may boast that he is curing his patient's pneumonia, when his treatment does not in fact result in the anticipated recovery.

(Ryle, 1949: 143)

A task verb, and the corresponding achievement verb, differ in their application.

One big difference between the logical force of a task verb and that of the corresponding achievement verb is that in applying an achievement verb we are asserting that some state of affairs obtains over and above that which consists in the performance, if any, of the subservient task activity.

(Ryle, 1949: 143-4)

It also follows that there can be achievements, which are not preceded by task performances. It is, for example, possible to have achieved a true conclusion without having previously performed particular tasks, such as the weighing of evidence.

In reviewing "Knowledge and the Curriculum", Soltis (1979) suggests that there are two dominant themes within this book. These are the debate as to what knowledge is most worthwhile for inclusion in curricula, and the nature of curriculum planning and teaching. He further maintains that this discussion has occurred against two clear trends with respect to knowledge. In the first place, there appears to be an emerging willingness to abandon the search for certainty and absolute objectivity. This is to be achieved by recognising that man constructs his knowledge, and his ways of constructing knowledge, without resorting, necessarily, to extreme subjectivity and relativism. Secondly, there appears to be an increasing recognition of a range of different domains of meaning as legitimate ways of understanding experience, with each domain having its own conceptual structure, objectivity and logical structure.

Thus knowledge is being viewed more and more as a social, instrumental, public construction and refinement of symbol systems designed to make assertions about some unique range of human experience

(Soltis, 1979: 773)

In addition, Soltis (1979) claims that there are two aspects of Hirst's treatment of the Forms of Knowledge, which need more attention. These are:

- (a) The content of the Forms as compared with their form;
- (b) The notions of skills and tacit knowledge.

That is, there has been an emphasis on structure and form at the expense of the content of the Forms, and procedural and tacit knowledge.

A central question is whether or not the verb 'to know' is an achievement or task verb. If 'to know' is taken as the former, the Forms of Knowledge, as Hirst appears to propose, are bodies of propositional knowledge. Conversely, if 'to know' refers to the task of coming to know, the emphasis is on procedural knowledge. As discussed previously, a key question with respect to Hirst's proposals is whether or not the Forms refer to procedural or propositional knowledge, and hence the educational, and therefore curriculum, implications of possible answers to this question. In this regard the philosophy of Michael Polanyi, and its implications for education, provides an alternative perspective for considering this question. In particular, this philosophy promotes a reconsideration of the notions of inter-subjective agreement, development and objectivity, as well as providing different insights into the 'knowing how - knowing that' dichotomy.

The key questions which arise from this section include:

1. Is knowing an occurrent or dispositional state of the mind?
2. Does all knowing necessarily involve conation or feeling?
3. Are the conceptual structures of knowledge traditional or intrinsic?
4. Is knowledge being viewed more and more as a social, instrumental and public construction?
5. Is the verb "to know" a task or achievement verb?
6. Is the knowing-how/knowing that dichotomy discrete?

These questions generate, at least, the following pairs of bi-polar statements, or dichotomies:

Knowing is an occurrent state. Knowing is a dispositional state; Knowing is purely objective. Knowing is always personal; Conceptual structures of knowledge are traditional. Conceptual structures of knowledge are intrinsic to the knowledge; Knowledge is absolute and objective. Knowledge is culturally relative and socially constructed.

"To know" is a task verb./"To know" is an achievement verb. All knowledge is procedural or propositional. Some knowledge is neither procedural nor propositional.

B6: Polanyi, objectivism and tacit integration

In Study of Man (1958), London: Routledge and Kegan Paul, Polanyi is strongly critical of "objectivism" which he describes as "a completely precise and strictly logical representation of knowledge" (Polanyi, 1958: 18). Polanyi contends that, for objectivists,

any personal participation in our scientific account of the universe is a residual flaw which should be eliminated in due course.

(op cit.: 18)

"Objectivism" is seen as a cult of precision in which all acts of evaluation are to be treated with serious suspicion. As well as promoting a tendency towards positivism, this movement, he suggests, tends to doubt the value of anything which is irreducible to perceptual data. Furthermore, there is a tendency to account for scientific knowledge in terms other than truth, such as probability and simplicity. Again "Objectivism", according to Polanyi, seems to oppose



the development of ontological hierarchies, and to favour the reduction of explanation and knowledge to one level, with knowledge of this lower level considered to be more objective. Indeed, the word "knowledge" is said to suggest "Objectivism", and is systematically ambiguous between referring to 'knowing' as an act of the knower, and 'things known' by the knower. It is the above objections and the difficulties arising from this ambiguity, which Polanyi considers in terms of the tacit integration of knowledge.

Polanyi proposes that knowing is a personal act involving judgement and commitment. All knowing is an activity involving skills. Such skills are not translatable, without remainder, into propositional knowledge. That is, their explicit understanding, and hence knowing, must always remain tacit. That is, all knowing is fundamentally tacit. As all knowing is rooted in tacit integration, the objectivist's ideal becomes an impossibility. All knowing will have an acritical basis. Moreover, the active participation of the knower in shaping knowledge is vital, and evaluation is, at least implicitly, involved. Thus tacit integration of knowledge will occur only through the process of 'in-dwelling'. That is, tacit integration will occur only through participation in the skills inherent in the knowledge to be acquired. One cannot 'know' chess unless one has participated in all those activities, and acquired all those skills, the totality of which comprises 'knowing' chess. Such tacit integration is a reflection of the structure of reality, and can occur at many levels within a particular activity. That is, most activities are analysable into a hierarchy of skills. Hence tacit

integration affords a multilevel, or hierarchical, view of the world.

Polanyi's philosophy is fiduciary.

The frank acknowledgement of the fiduciary basis of learning stands in stark contrast to anxiety about 'indoctrination' which is widespread today. If one takes various accounts of what 'indoctrination' is supposed to be and why it is supposed to be wrong, that is, when the word is not being used as a mere term of abuse, one finds behind it and the anxiety it expresses objectivist pre-suppositions which, if seriously followed, would make us disengage ourselves from all education and upbringing of children.

(Allen, 1978: 174)

That is, he contends, a fiduciary basis for learning and teaching cannot be escaped. In this sense, implanting unshakable beliefs cannot be wrong 'in principle', because there are at least some beliefs, which we tacitly and unshakable hold. For example, we proceed on the basis of beliefs that there is something to be learnt or discovered, that adult communication is generally coherent and correct, and that our intellectual processes generally function normally.

Objectivists would, however, challenge Polanyi's position by maintaining that it is incorrect, in principle, to teach beliefs in the absence of public evidence. That is, the validity of tacit evidence would be denied. Similarly, teaching beliefs without due regard for evidence would be unacceptable. By contrast, Polanyi's notion of tacit integration asserts that it is not possible to escape an acritical basis for teaching and learning, and that, accordingly, we should openly avow the beliefs we hold, recognise the strict limits of personal autonomy, as defined by the necessary tacit basis of understanding, and accept the

responsibility to teach the pursuit of truth and justice, and similar undemonstratable beliefs. Importantly, Polanyi's proposals provide for a critique of behaviourism, give an alternative view of the nature of body and mind, and appear to overcome the often sharply drawn distinction between the humanities and the sciences.

Hirst's proposals with respect to Forms of Knowledge indicate his belief that all knowledge is reducible to one or other of the Forms, or to other Forms which have yet to emerge. Rationality is regarded as possessing the Forms of Knowledge, and for Hirst knowledge is essentially public, and publicly testable. In this sense, the inclusion of areas of knowledge, which are not amenable to public representation and scrutiny, in the curriculum may be designated as both educationally and epistemologically dubious. But for Polanyi, knowledge is not necessarily public, and there will always be seriously irresolvable disputes with respect to knowledge and understanding. There are, indeed, no impersonal tests which can decisively determine anything and, in particular, which would inform the determination of a common curriculum for, say, secondary education. Thus Polanyi's views imply that core curricula and common schools should not be insisted upon, whereas Hirst's proposals suggest a common curriculum for all, based upon representative samples of the various Forms of Knowledge.

Contrasting Polanyi's proposals with those of Hirst stresses the philosophical issue of objectivism and subjectivism. This issue, and its implications for teaching and learning, is central to this module of the reading content of the teacher development programme.

The important questions raised in this section include:

1. Does all knowing involve personnel skills and commitment?
2. Are intellectual skills translatable, without remainder, into propositional knowledge?
3. Does understanding always remain, to some extent, tacit?
4. Are all activities analyzable into a hierarchy of skills?
5. Does educating necessarily involve indoctrinating?
6. Is implanting unshakable beliefs necessarily wrong in principle?
7. Is personal autonomy always limited by tacit understanding?
8. Are there irresolvable disputes with respect to knowledge and understanding.

As before, each of these questions can be expressed in terms of dichotomies, which indicate the philosophical issues underlying these questions? These dichotomies include, for example, the following:

All knowing involves personal skills and commitment. All knowing is impersonal.

Intellectual skills are/are not translatable into propositional knowledge.

All understanding is explicit. All understanding is necessarily implicit.

Educating necessarily involves implanting unshakable beliefs. Educating does not involve implanting unshakable beliefs.

Implanting unshakable beliefs is wrong, in principle. Implanting unshakable beliefs is not wrong, in principle.

Tacit evidence is valid. Only public evidence is valid.

#### B7: Summary of issues identified

The issues identified are as follows:

1. Those pertaining to liberal education based on academic excellence to be attained through the pursuit of objective knowledge as contrasted with a notion of liberal education based upon utilitarian values satisfying social and political ideals.
2. Those relating to epistemological relativism and objectivism.
3. Issues concerning the basis of the perceived regularity and coherence of the experienced world.
4. Issues relating to the concept of educational development, and specifically whether such a concept is subject to internal or external principles and criteria.
5. The basis of inter-subjective agreement, and the associated notions of objectivity and truth.
6. The classification of knowledge into categories such as propositional knowledge, procedural knowledge, knowledge by acquaintance and tacit knowledge.
7. Objectivism and subjectivism, and Polanyi's notion of the tacit integration of knowledge.

The philosophical debates underlying these issues are encapsulated within the dichotomies listed at the end of each section. These philosophical debates, and

the dichotomies used to express them, are the focus of this section of the reading content of the programme.

### C3: Curriculum development and student-centredness

Underlying the notion of student-centred education is the view that all theories are only our present ways of describing and explaining our world. In order to advance, these theories must be criticised, and subsequently modified, rather than accepted without question. Those who argue that the experience of learning for the individual is therefore primary may, if this argument is taken to its logical conclusion, deny themselves any right to interfere at all in a student's learning programme. However, some form of traditional knowledge must always precede and influence individual experience. Even to leave a child with a family is to shape the child's experiences, at least to some extent, according to family values. Educational aims, no matter how broadly or narrowly formulated, cannot be completely value-neutral. There is always the assumption that particular activities are worthwhile, whether extrinsically or intrinsically so. If the aim is achieved, the child will have gained in some worthwhile way.

Given that accepted or traditional knowledge must always precede and shape individual experience to some extent, and that to educate is to influence a child's experience in some worthwhile way, there remains the problem of doing so without becoming over-inflential, and thus causing the undesirable effects of the uncritical acceptance of opinions and authority. Tradition cannot be ignored or dismissed. It is important for our tacit knowledge and understanding of the experienced world.

All educational theories are influenced by current beliefs about what knowledge is, how we come to know, and what counts as knowing. The assumption of the objectives approach to curriculum planning that predictability in what is learnt is both desirable and possible seems to be related to a view of knowledge as static, and given, external to the knower and publicly testable. It is this notion of knowledge which underlies methods of induction, the "finding" of regularities on which to base inferences about the experienced world. The verification of "theories" on the basis of induction relies upon the future resembling the past in certain pre-determined ways. To search for "objective" truth, as portraying the ultimate and enduring regularities of the experienced world, is to proceed through successive approximation by the methods of induction. By way of contrast, a view of knowledge and truth as being based upon human interaction emphasises the central role of the student in constructing personally significant ways for understanding and interpreting experience. In this case, what is known and understood is both personal and contextual.

A student-centred approach to curriculum planning suggests that knowledge and knowing are relative. In practice, the work of students in a student-centred curriculum is guided, at least to some extent, by teachers, and this guidance may be based on the notion of objective standards within knowledge and, indeed, of an objective body of non-humanly based knowledge. In such cases, assessment of student progress and achievement will be, at least partly, in terms of the structures and standards inherent in the knowledge being studied. On the other hand, if knowledge and knowing are relative then no such assessment of

progress and achievement seems possible. If educating is concerned with some notion of making better, or progress, then the objective/relative dichotomy with respect to knowledge and knowing is of crucial significance when considering student achievement in a student-centred curriculum.

#### C4: Curriculum development and educational processes

When discussing the possible categorisation of knowledge Hirst (1974) states:

... the phrase 'objects of knowledge' is in general taken not to cover the objects about which, or of which, we have knowledge when that state of mind is being distinguished from others.

(Hirst, 1974: 57)

Moreover, Hirst suggests that there are three possible sets of logical objects of knowledge. These are:

- (a) People, places and things, knowing which may be referred to as 'knowledge with the direct object' or knowledge by acquaintance;
- (b) Knowing what is the case. In this case what we know is expressed in terms of statements of true proportions i.e. 'knowledge-that';
- (c) Procedural knowledge in the sense of knowing how or when to do things or 'knowledge how'.

Each of these classes of knowledge may be used as a basis for curriculum planning.

In the first instance, curricula planned to enhance knowledge by acquaintance would emphasise participation in selected experiences, with the knowledge gained from these not necessarily being articulated as statements of propositional knowledge, that is knowledge-that. If, however, curricula are planned to emphasise knowledge-that, then the Forms of



Knowledge or disciplines seen as logically organised bodies of propositional knowledge, may be given priority in selecting curriculum content. For the purposes of this section, curricula conceived in terms of procedural knowledge will be considered. This approach to curriculum planning emphasises the processes of learning rather than curriculum outcomes. For this reason, this approach is often referred to as the process approach to curriculum planning.

In discussing episodic works, Ryle (1949) draws attention to a particular group of words, which he designated "achievement words". In particular, he distinguishes two classes of verbs - achievement verbs and task verbs. Such classes of verbs are crucial in describing both the processes of reaching towards a particular end-point, as the task, and the achievement of that end-point, as the achievement. In many cases, the same verb can have both senses of meaning. Thus "to learn to solve quadratic equations" may be interpreted as referring to both senses of the verb "to learn". In the first instance, "to learn" may indicate becoming competent in the processes of how to solve quadratic equations, that is, in the necessary procedural knowledge. "To learn" may, however, refer to the knowledge gained only through the achievement of having solved quadratic equations. Such knowledge only becomes available through the achievement of the set task, and is not learnt merely through participation in the processes or procedures leading towards completion of that task. Thus a task verb, and the corresponding achievement verb, differ in their application.

One big difference between the logical force of a task verb and that of the corresponding achievement verb is that in applying an achievement verb we are asserting that some state of affairs obtains over and above that

which consists in the performance, if any, of the subservient task activity.

(Ryle, 1949: 143-4)

Hence, there may be achievements which are not necessarily preceded by task performances. It is, for instance, possible to achieve a true conclusion without having performed any of the tasks which would normally lead to this conclusion.

In emphasising processes, curriculum planners are giving priority to the performance of those tasks and procedures, which are seen to lead to the achievement of a particular objective. Process curricula, therefore, depend for their specification upon the possible conceptual separation of the underlying (procedures and performances from the objectives) to be achieved. The conceptual separation of objectives and processes is therefore critical to the notion of a process approach to curriculum planning, in which the emphasis is on procedural knowledge. Insights into the dependence of this approach on the objective/process dichotomy may be obtained by a study of the languaging of this dichotomy and, in particular, by the task and achievement aspects of the verbs used.

Recently, attempts have been made to specify process curricula in terms of skills. Typical of such specifications are those which seek to denote curricula in terms of learning skills. Thus "learning how to learn" has become a catchphrase for some curriculum planning. The proposal of learning skills appears to assume that, over and above the processes and procedures involved in achieving particular learning outcomes, there are super-ordinate processes. Moreover, sets of such processes are assumed to constitute coherent wholes, the personal referant of

which is denoted as a skill. Such skills are then assumed to be applicable to a range of contexts other than those from, and through, which they were originally acquired. Learning skills obtained through participation in particular learning experiences are said to be transferable to other learning situations. Such skills may form the core of a process-oriented curriculum.

Further examples of skills-based curricula are those proposed in craft education. The word "craft" may refer to the tasks in the practice of a craft, or the achievements associated with this craft. As a task word it appears to denote that set of specialised skills associated with the performance of the craft. In terms of achievement it appears to denote the purposes of the craft. If bush-walking (is a craft, "bush-walking" denotes not only specialized skills associated with the practice of bush-walking), but also its purposes, such as the appreciation of the natural environment. In this instance, the achievement of the purposes of the craft do not appear possible without participation in the skills intrinsic to the craft. This non-separability of participation and achievement may characterise a craft.

In this regard, it is not being suggested that crafts are concerned only with practical skills. Crafts may entail a full range of skills including intellectual, social and linguistic, as well as manual. A craft, therefore, incorporates a range of specialised skills which are acquired only through purposeful participation in the practice of these skills.

In this section it has been argued that:

- (i) "Objectivism", and by apparent association, the objectives approach to curriculum planning, seems to oppose the development of ontological hierarchies and to favour the reduction of explanation and knowledge to one level, with knowledge of this lower level considered to be more objective.
- (ii) Knowing, as for Polanyi, is a personal act involving judgement and commitment.
- (iii) All knowing is an activity involving skills.
- (iv) Such skills are not reducible without remainder into propositional knowledge, and hence knowing and understanding such skills necessarily must always remain tacit.
- (v) All knowing, therefore, is fundamentally tacit with an acritical basis.
- (vi) Tacit knowledge and understanding is only acquired through participation in those activities inherent to the knowledge to be acquired.

One cannot "know" chess unless one has participated in all those activities and acquired all those skills whose totality comprise "knowing" chess.

(Page )

Skills-based curricula, therefore, emphasise personal participation, judgement and commitment, and give a central place to activity and tacit understanding. Objectives-based curricula tend to stress curriculum content and the acquisition of objective knowledge obtained through the progressive reduction of all knowledge to propositional or behavioural knowledge. Of particular interest will be the content/process and objectives/process dichotomies as these apply to curriculum development.

### C5: Curriculum development and conversation in education

The highlighting of the concept of conversation, and of the importance of human interaction by Rorty (1980), is supported by Bantock (1980) when he describes the Renaissance world as one in which words were central and suggests that the current scientific outlook is a reaction that has replaced the Renaissance orientation towards "rhetoric" by one directed towards things and objects, or "reality". The Renaissance outlook, as described by Bantock, was itself a reaction against a "transcendental" view of the world as being merely a reflection of some ultimate, absolute reality such as a Christian heaven or a Platonic world of "real" forms. This outlook was characterised as one in which knowledge seemed to come through revelation, rather than human effort and interaction. Within this view, humans had little sense of control, remained passive and accepting, and secure in the belief that wise decisions were made by some authority and, hence, rarely reflected on, or criticised, decisions. For the Renaissance, however, decisions had become criticisable, and the world was no longer seen as "given" in the sense of being unalterable. Rather, it was given by reasonable divinity and tradition, but was not unchangeable. It could, and should, be shaped by human purposes and interactions.

Renaissance education was concerned, firstly, therefore, with moving from the given or "natural" to something man-made or "artificial". This made humans central and active in the world. The principal human action was interaction with others. Thus the ideal conception of a person, as presupposed in education, was of one who could interact effectively with others, and persuade them through the spoken word. To change

the world, to be active in it, was to communicate, to have control of words rather than things.

This view of educating contrasts with that based on student-centredness. For this view, "naturalness" and individual experience are central, whilst for Renaissance education the mind was to be prepared for experience, and making sense of experience would be facilitated by learning from others, and in particular, firstly internalising conventional and traditional wisdom. Renaissance education was primarily concerned with initiation, the formation of habits, the moulding through interaction of the natural into something "artificial". Whilst this was aimed at the individual creating changing views of the world, it was possible for people to adopt the experiences of others as their own, and function on the basis of second-hand wisdom. As described by Bantock (1980) the "acceptance of a heritage" rather than "the critical scrutiny of it" became dominant.

The well-trained rhetorician could use the art of persuasion for undesirable ends. Words can cheat and confuse, as well as clarify. The centrality of words gave scope for doubts about truth and reality. How is the truth to be found, and what may count as evidence? Thus to distinguish between what was "natural" and what was "artificial", between "subjective appearance" and "objective appearance" became critical, as a change of focus from words to things gained impetus. This change of focus was also enhanced by the development of printing, whereby the speaker and the word became more separable. Speech could be frozen and contemplated, words were taken out of their humanly interactive context. Language and behaviour became separately perceived, both were static

and observable. This may have lead to a further development in self-consciousness, an ability to stand back outside the "flow of life", regard it "objectively" and reflect on it. Thus behaviour becomes an object or thing, observable and separated from the behavior.

In this shift from "rhetoric" to "reality", Bantock (1980) suggests that truth becomes what is perceived, rather than what is uttered. Thus the search for truth is to be separated from language and human interaction. Evidence becomes what can be perceived by the individual, uninfluenced by others. Just as the "natural" came to be more highly prized than the man-made or artificial, and as knowledge became equated with a search for "objective" truth, so experience came, as exemplified by Rousseau, to precede instruction.

The removal of truth from the social context in which it was negotiated, as during the Renaissance, is also demonstrated by Descartes' proposals for finding certainty within the solitary self, as opposed to the self in interaction with others. Descartes attempted to proceed from the fact that he thought, rather than from any shared past knowledge. The "cognito" was the essence which both preceded and produced self-conscious existence. Thus Descartes' influence reinforced the conception of physical nature as a reality separate from this "essential" self. It is this separation which underlies traditional mind/body dualism. It is this dualism which implies the subject/object and subjective/objective dichotomies. The question of which is prior in terms of truth, language or experience, is fundamental to curriculum planning, if

educating is to be concerned with coming to know what is true.

#### C6: Curriculum development and integration

In discussing Hirst's proposals with respect to the Forms of Knowledge, it would seem necessary to consider whether or not integration between such Forms is possible, and, if so, what is the nature and curriculum implications of such integration.

As Hirst wrote

Even a cursory glance at contemporary proposals for curriculum reform serves to show the ideas of curriculum integration as immensely popular.

(Hirst, 1974: 132)

As previously discussed, a central issue with respect to Hirst's proposals is whether the Forms are considered to be propositional or procedural knowledge. Clearly, the nature of any possible integration of the Forms, and hence its curriculum implications, will be dependent upon which of the above positions is accepted. The reminder of this section will be concerned with a discussion of these positions.

To consider integration in terms of propositional knowledge one must ask what logically happens when propositions from different Forms (disciplines) are brought together in a synthesis. Such propositions involve the logical relationship of concepts drawn from the respective Forms. Concepts are the basic items of such logical relationships. Any synthesis of propositions drawn from different Forms must involve, fundamentally, some form of merging or transformation of these concepts. This is on the grounds that the only other possibility for syntheses founded in the concepts of the Forms would be through concepts super-



ordinate to all Forms of Knowledge. But this possibility is precluded by Hirst's assertion of the irreducibility of the Forms.

Consider the case in which propositions drawn from mathematics and physics are to be brought into some synthesis. Propositions of mathematics and physics are drawn from different Forms of Knowledge. Their concepts are characteristic, therefore, of the respective Forms. It is this characterisation, which is critical. For mathematics, it may be argued that concepts are disconnected, logically, from perception, and the physical world. Physics concepts are not so disconnected, and are dependent upon perception. Any attempt to integrate concepts drawn from mathematics with those from physics gives rise to three possibilities. These are:

- (i) The concepts of physics are modified in some way so that they may be used as mathematical concepts;
- (ii) The concepts of mathematics are modified so that they can be used as concepts in physics;
- (iii) The concepts of both physics and mathematics are modified so that they can be used together.

In this regard, Korner (1969) maintains:

... the 'application' to perception to pure mathematics which mathematics which from perception, consists in a more or less regulated activity involving

- (i) the replacement of empirical concepts and propositions with mathematical,
- (ii) the deduction of consequences from the mathematical premises so provided, and
- (iii) the replacement of some of the deduced mathematical propositions by empirical.

(Korner, 1969: 182)

Given the dependence of empirical concepts on perception, this first possibility offers the only basis for integration. The process of integration involves the idealisation of empirical concepts into exact concepts, such as those of mathematics. Both sets of concepts are then subject to the laws of mathematics. Thus integration occurs by deduction. After deduction has been used to obtain an idealised solution, the problem and the solution are then re-connected with the physical world.

In extending this approach to the integration of concepts and propositions drawn from any two domains of knowledge, Gibbons (1979) proposes:

(a) One domain must be the domain in which the enquiry is set.

(b) The concepts and propositions in the domain of enquiry are idealised so that they combine in the argument with the concepts and propositions of a different domain, the instrumental domain.

(c) Where a conclusion has been reached in the instrumental domain, the de-idealisation process takes place.

(Gibbons, 1979: 325)

This approach suggests that the nature of the integration between any two Forms of Knowledge may be characteristic of the pair of Forms being integrated.

In Gibbons' (1979) terms, this characterisation would depend upon which Form was chosen as the domain of enquiry, and which was instrumental. On this analysis, curriculum integration is possible to the extent that the concepts of one domain or Form of Knowledge can be modified to become coherent with those of another domain or Form, the nature of the integration depending upon the logical and conceptual

structure of these Forms, and the conceptual modification inherent. Integration is a process of conceptual "metamorphosis" made possible by the logical and public representation of all knowledge into the Forms of Knowledge, or into emerging Forms. Integration is "objective" in that it is essentially public, capable of consensus, and open to public test. Furthermore, it is objective in the sense that it is independent of personal participation and perception. This is in sharp contrast with the philosophy of Michael Polanyi, who attacks such an objectivist's approach.

For Hirst, the curriculum is drawn from the Forms of Knowledge. For each Form of Knowledge these are public tests against which the truth or fallacy of propositions can be assessed. This curriculum would not, for example include the teaching of beliefs without regard for the available public evidence in support of these beliefs, and the tests for truth which could be applied to such evidence. For Polanyi, the teaching of firmly held beliefs cannot be wrong in principle, because they must ultimately be tacitly known. There is a limit to what can be made public. Some tacit evidence must be accepted. On this basis, it would be acceptable, therefore, to teach beliefs without public evidence. That is, at least some learning must take place prior to questions of public evidence being raised otherwise one would have to teach the evidence for "truth" ad infinitum.

In this section, two contrasting views of curriculum integration have been presented. In the first instance, integration of the Forms of Knowledge was considered as a logical process based on conceptual metamorphosis, whilst the second view proposed that

integration was tacitly based. The first position, and that to which Hirst appears to subscribe, depends upon the objectivity of knowledge whilst the second position, as postulated by Polanyi, is dependent upon a rejection of this notion of objectivity in favour of a reality which consists of comprehensive entities, which are seen as integrated wholes such that we can, by a process of "in-dwelling", come to know the whole. For Hirst, integration is a rational process. For Polanyi, it is subjective in that it entails personal commitment and evaluation. For both, education will only become possible if there is a basis for obtaining inter-subjective agreement. The central question therefore concerns the nature of this inter-subjective agreement. That is, whether or not such agreement is essentially objectively or tacitly based. This, again, is the issue of objectivism and subjectivism.

#### C7: Summary of issues identified

In this section some of the issues identified are as follows:-

1. Objectivism and subjectivism, particularly in relation to knowledge;
2. The specificity or divisibility of student abilities;
3. Categorisation of knowledge as propositional, procedural and knowledge by acquaintance.
4. The separation of task and achievement for educational activities.